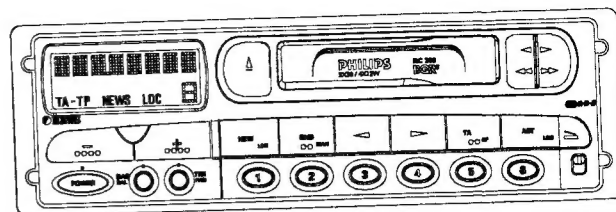


# Cassette car radio 22RC268/00 22RC268/80 22RC284/00 22RC288/00 22RC288/80

Service  
Service  
**Service**



For repair information of the Cassette deck see Service Manual of Auto Cassette Deck :  
TN301NX265 ( 22RC268/00 268/80 ) +4869  
CDS36-PR ( 22RC284/00 288/00 288/80 ) +5032

# Service Manual

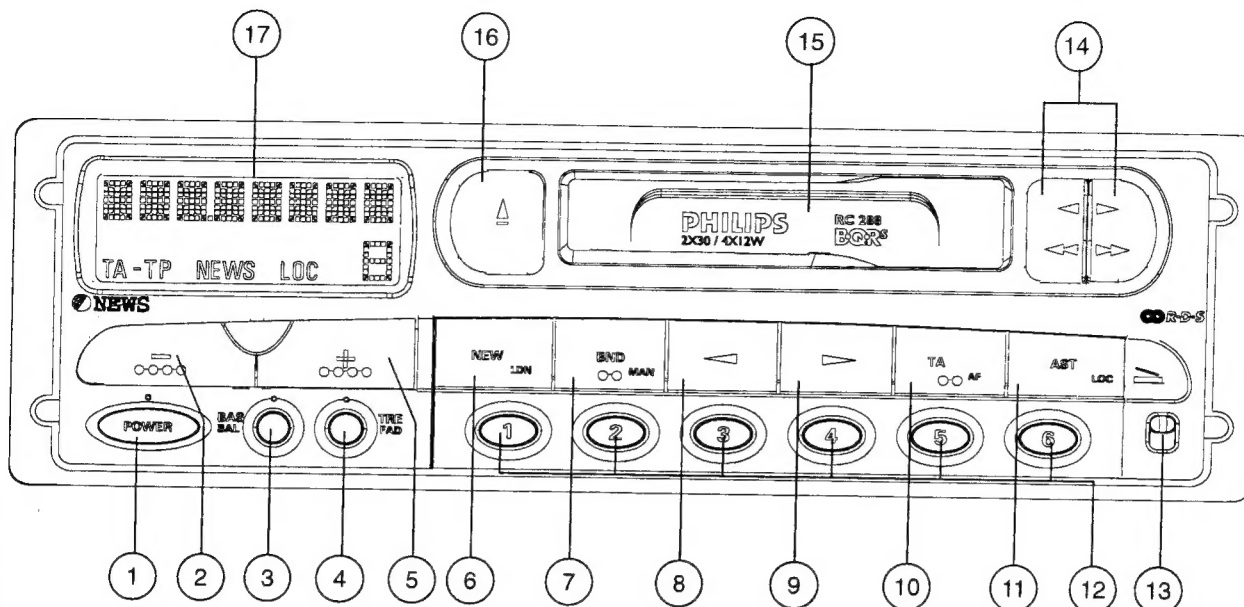
12 V 

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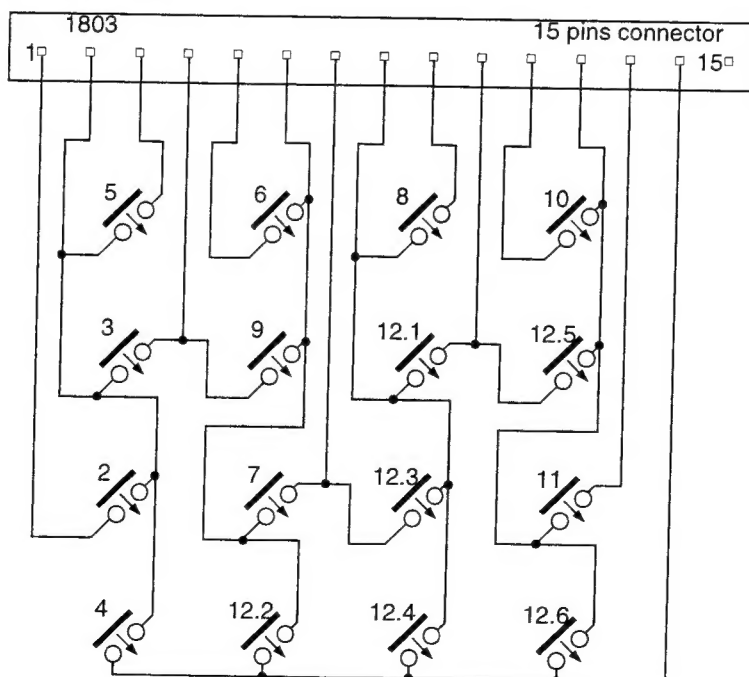
# PHILIPS

## CONTROLS



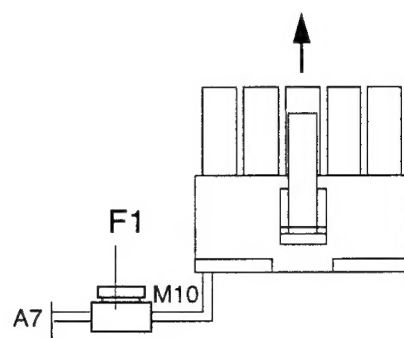
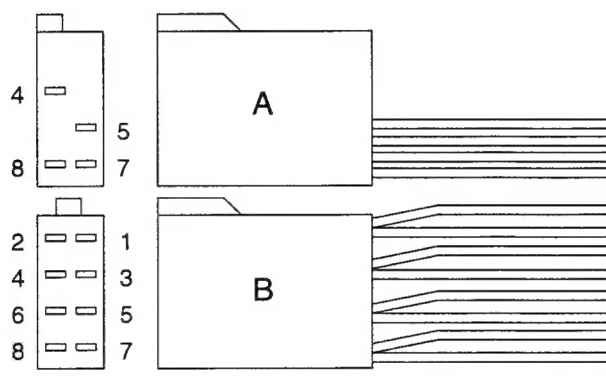
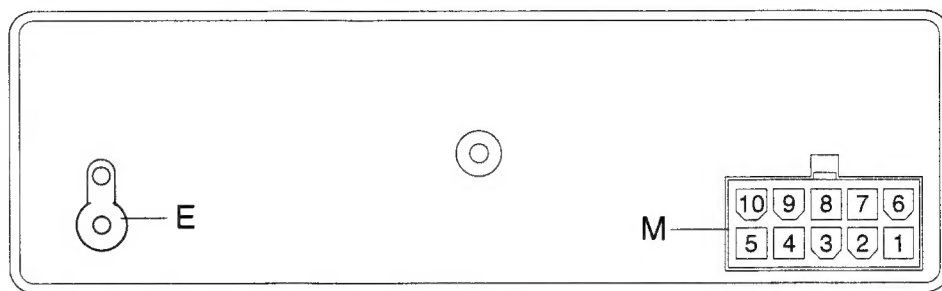
- |   |   |
|---|---|
| 1 On / Off                              | 10 Traffic Announcement / Alternative Frequency |
| 2 Volume -                              | 11 Autostore / Local                            |
| 3 Bass / Balance                        | 12 Presets Selection                            |
| 4 Treble / Fader                        | 13 Release Knob for detachable unit             |
| 5 Volume +                              | 14 Ffw / Frw ( 288 )                            |
| 6 News / Loudness                       | 15 Cassette Opening + Flap                      |
| 7 Band Selection / Manual Search Select | 16 Eject Button ( 288 )                         |
| 8 Search Down                           | FFW / Eject ( 268 )                             |
| 9 Search Up                             | 17 Display                                      |

## KEYBOARD SCHEMATIC DIAGRAM



22RC268/00  
 22RC268/80  
 22RC284/00  
 22RC288/00  
 22RC288/80

## CONNECTIONS



### A : POWER SUPPLY

A4 = M9 +12V PERMANENT  
 A5 = M4 AUTOMATIC AERIAL  
 A7 = M10 +12V SWITCHED  
 A8 = M5 GROUND

YELLOW / RED  
 BLUE  
 RED  
 BROWN

### B : LOUDSPEAKERS

#### FOR 4 X 4.5 W CONFIGURATION :

B1 / B4 = M7 REAR RIGHT+ / FRONT RIGHT -  
 B2 = M8 REAR RIGHT -  
 B3 = M3 FRONT RIGHT+  
 B5 = M1 FRONT LEFT+  
 B6 / B7 = M2 FRONT LEFT- / REAR LEFT+  
 B8 = M6 REAR LEFT -

#### FOR 2 X 15 W CONFIGURATION :

( Only 513/00 -/80 )

B2 = M8 RIGHT CHANNEL -  
 B3 = M3 RIGHT CHANNEL +  
 B5 = M1 LEFT CHANNEL +  
 B8 = M6 LEFT CHANNEL -

BLUE - GREY / BLACK  
 BLUE / BLACK  
 GREY  
 GREEN  
 GREEN / BLACK - BROWN  
 BROWN / BLACK

E AERIAL PLUG (DIN 41585)

F1 FUSE 5A

22RC268/00  
 22RC268/80  
 22RC284/00  
 22RC288/00  
 22RC288/80

## TECHNICAL DATA

### GENERAL

Power supply	:14.4V DC
Dimensions	:180x150x51.8 mm
Consumption	:Set off < 3mA
	:Vol min 550±200mA
	:Vol max 4x5W = 2.6A±0.35
	:Vol max 2x15W=4A±0.5

### RADIO

LW	: 144-288 KHz
MW	: 531-1629 KHz
FM	: 87.5-108 MHz
IF-AM	: 450 KHz / 10.7 MHz
IF-FM	: 10.7 MHz / 72.2 MHz
Sensitivity 26dB S/N	: 28 µV (LW)
	: 18 µV (MW)
	: 3,5 µV (FM)
Limitation α-3dB	: 3 to 15 µV

### CASSETTE

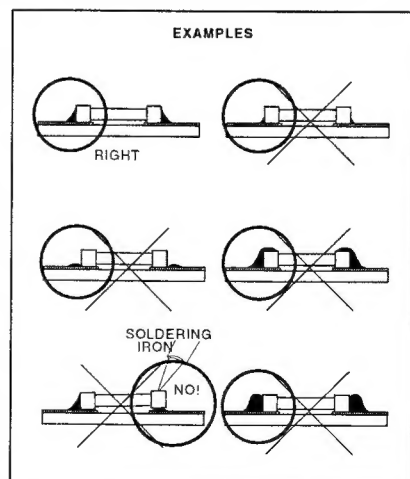
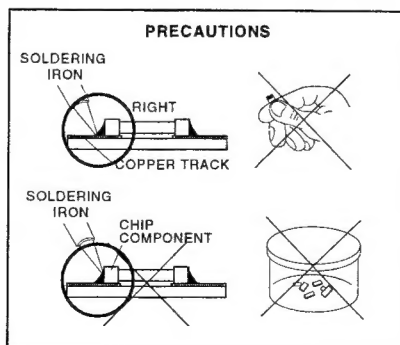
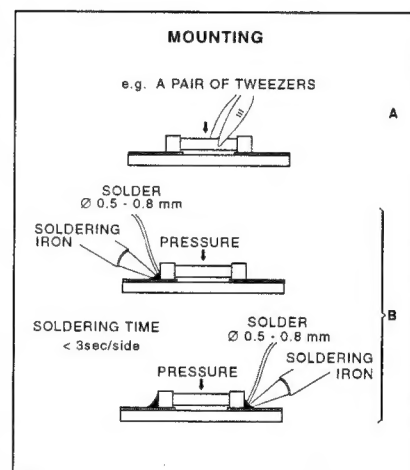
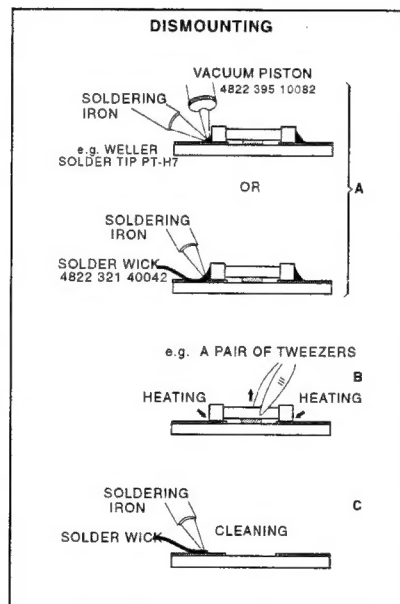
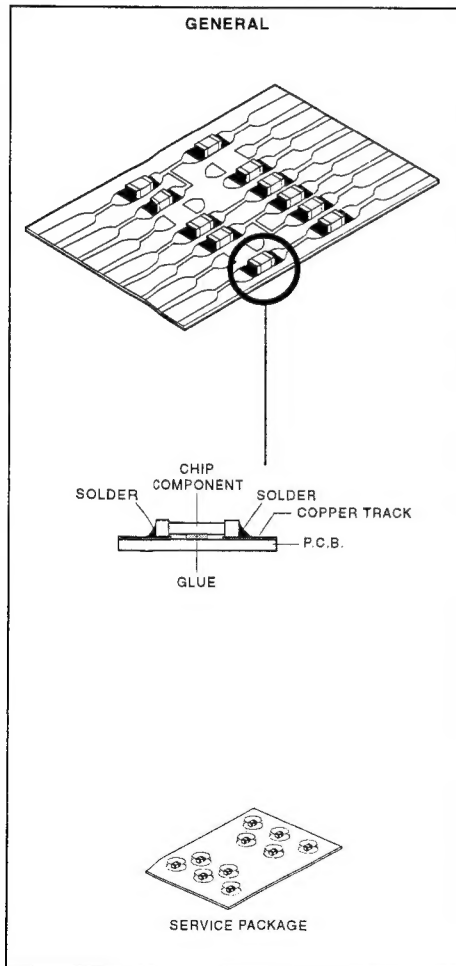
Cassette mechanism	:TN-301NX-265 ( 268/00 ../80 )
Number of tracks	:2
Tape speed	:4.75 cm/sec
Wow and flutter	:≤ 0.35% (+5° to +35°)
Crosstalk	:> 21dB

Cassette mechanism	:CDS 36-PR ( 288/00 ../80)
Number of tracks	:2x2
Tape speed	:4.75 cm/sec
Wow and flutter	:≤ 0.35% (+10° to +45°)
Crosstalk	:> 21dB

### AMPLIFIER

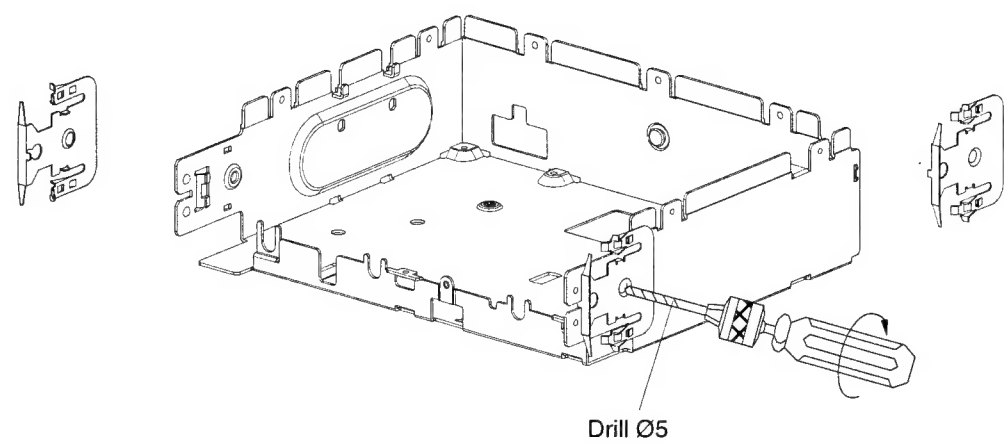
Output power	:2x15 or 4x4.5W / 4Ω (D = 10%)
Loudness	:+7dB ± 2dB at 60Hz
	:+4dB ± 2dB at 10kHz
Treeble control	:+10/-10 ± 2dB at 10kHz
Bass control	:+12/-12 ± 2dB at 60Hz
Balance control	:>12dB
Fader	:>12dB

## HANDLING CHIP COMPONENTS



22RC268/00  
 22RC268/80  
 22RC284/00  
 22RC288/00  
 22RC288/80

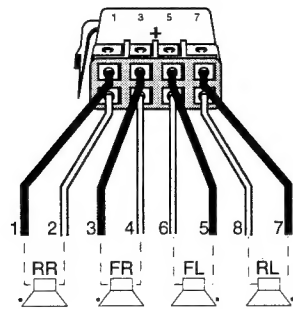
**LOCKING SPRING REMOVAL**



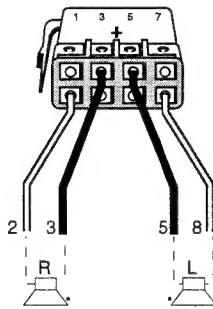
If a Mounting Spring needs to be changed, you have to first eliminate the fastening by drilling it out with a Ø5mm hand-drill  
For the fixing of the new one , use a counter-sunk screw Ø3mm, length 5 or 6mm and a M3 nut

**LOUDSPEAKERS CONNECTION**

4 Loudspeakers  
4 x 5 W



2 Loudspeakers  
2 x 15W



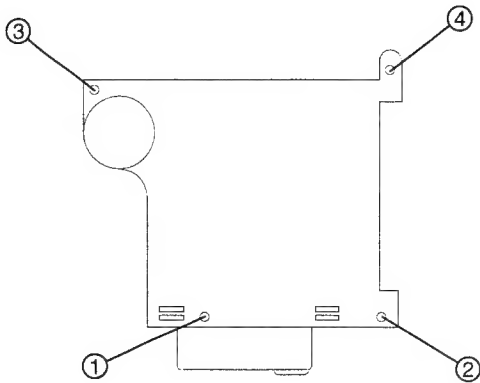
ESD



**WARNING**

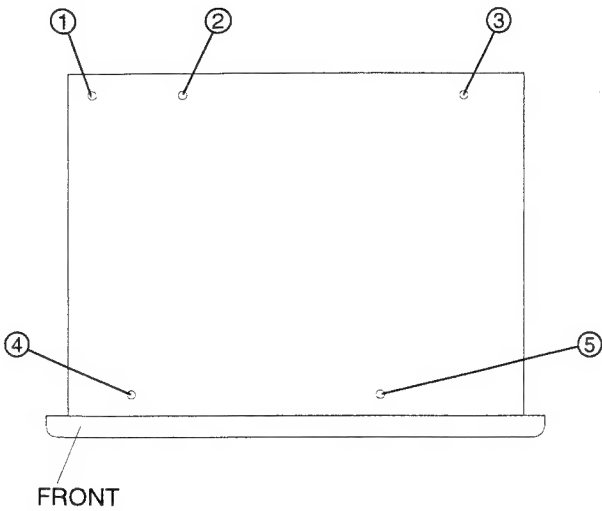
All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.  
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

**SCREWING SEQUENCE DECK**



Top view

**SCREWING SEQUENCE PWB**



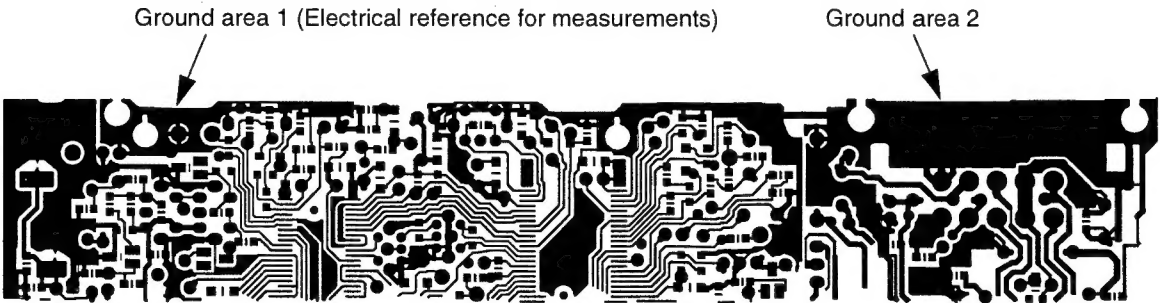
FRONT

**REMOVING THE PWB**

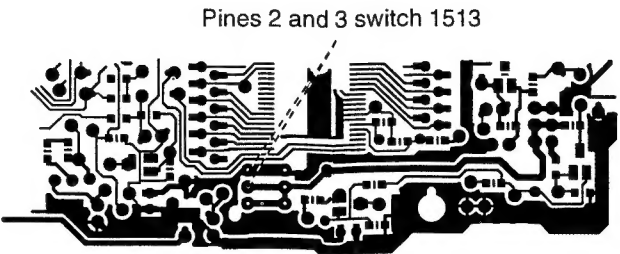
- 1) Disconnect all the cables and flex foils, and disengage the lamp from the light box of the LCD
  - 2) Remove the front
  - 3) Remove the deck (see screwing sequence)
  - 4) Disengage the lamps from the metal frame
  - 5) Remove the transparent LED
  - 6) Remove the bracket of the power IC
  - 7) remove the antenna plug bracket
- Now you can remove the PWB (see screwing sequence)

**CONNECTING THE PWB FOR MEASUREMENTS ON THE COPPER SIDE.**

- 1) Connect a wire (by soldering) between ground areas 1 and 2.
- 2) Short circuit the pins 2 and 3 of the detection switch.
- 3) Reconnect the flat foils of the front and the supply cable. Also reconnect the tape deck.



Main PWB copper side

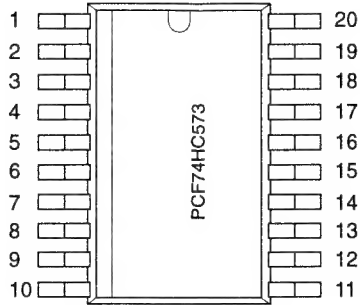


PCF74HC573 Octal D type transparent latch

SYMBOL	PIN	DESCRIPTION
OE	1	3-state output enable input
D <sub>0</sub> to D <sub>7</sub>	2 to 9	data inputs
GND	10	ground (0 V)
LE	11	latch enable input
Q <sub>7</sub> to Q <sub>0</sub>	12 to 19	3-state latch outputs
V <sub>CC</sub>	20	positive supply voltage

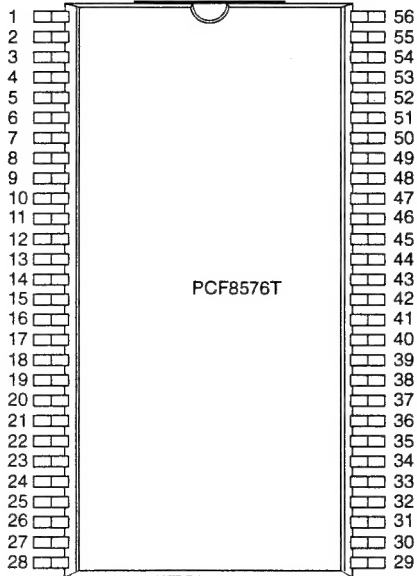
FUNCTION TABLE

OPERATING MODES	INPUTS			INTERNAL LATCHES	OUTPUTS Q <sub>0</sub> to Q <sub>7</sub>
	OE	LE	D <sub>n</sub>		
enable and read register (transparent mode)	L	H	L	L	L
latch and read register	L	L	h	L	L
latch register and disable outputs	H	H	L	L	Z



PCF8576T Universal LCD driver for low multiplex rates

SYMBOL	PIN	DESCRIPTION
SDA	1	I <sup>2</sup> C bus data input/output
SCL	2	I <sup>2</sup> C bus clock input/output
SYNC	3	cascade synchronization input/output
CLK	4	external clock input/output
V <sub>DD</sub>	5	positive supply voltage
OSC	6	oscillator input
A0	7	I <sup>2</sup> C bus subaddress input
A1	8	I <sup>2</sup> C bus subaddress input
A2	9	I <sup>2</sup> C bus subaddress input
SA0	10	I <sup>2</sup> C bus slave address bit 0 input
V <sub>SS</sub>	11	logic ground
V <sub>Lcd</sub>	12	LCD supply voltage
BP0	13	LCD backplane outputs
BP2	14	LCD backplane outputs
BP1	15	LCD backplane outputs
BP3	16	LCD backplane outputs
S0 to S39	17 to 56	LCD segment outputs



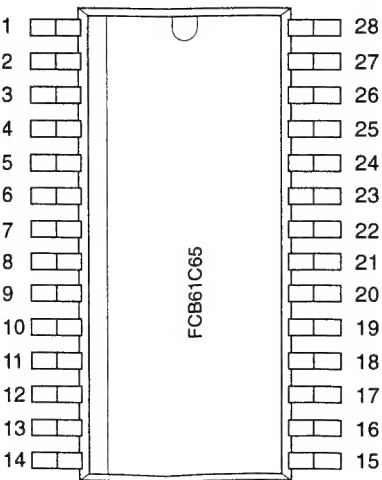
3AA6579T Radio Data System demodulator

SYMBOL	PIN	DESCRIPTION
QUAL	1	quality indication output
RDDA	2	RDS data output
V <sub>ref</sub>	3	reference voltage output (0.5 V <sub>DDA</sub> )
MPX	4	multiplex input signal
V <sub>DDA</sub>	5	+5V supply voltage for analog part
V <sub>SSA</sub>	6	ground for analog part (0V)
CIN	7	subcarrier input to comparator
SCOUT	8	subcarrier output for reconstruction filter
TCTR	9	test control
TEN	10	test enable
V <sub>SSD</sub>	11	ground for digital part (0V)
V <sub>DDD</sub>	12	+5V supply voltage for digital part
OSCI	13	oscillator input
OSCO	14	oscillator output
T57	15	57kHz clock signal output
RDCL	16	RDS clock output



HY6264ALJ-10 High speed CMOS static RAM

SYMBOL	PIN	DESCRIPTION
n.c.	1	not connected
A12	2	address input
A0 to A7	3 to 10	address inputs
I/O 1 to 3	11 to 13	data inputs / outputs
V <sub>SS</sub>	14	ground
I/O 4 to 8	15 to 19	data inputs / outputs
CE1	20	chip enable 1
A10	21	address input
OE	22	output enable
A8 to A11	23 to 25	address inputs
CE2	26	chip enable 2
WE	27	write enable
V <sub>DD</sub>	28	+ 5 V supply

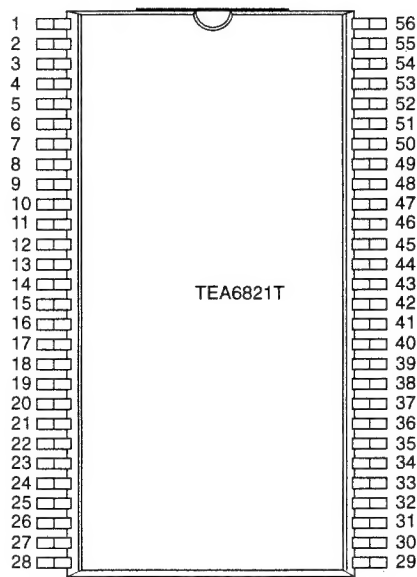


TEA6821T

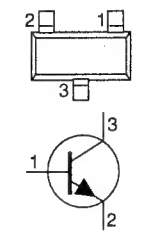
SYMBOL	PIN	DESCRIPTION	SYMBOL	PIN	DESCRIPTION
QDET1	1	demodulator tank	FMIFAMPOUT	29	FM-IF amplifier output
QDET2	2	demodulator tank	AFGND	30	AF ground
TSWITCH	3	time switch	DEEMPHR	31	de-emphasis capacitor right
GND	4	analog ground	DEEMPHL	32	de-emphasis capacitor left
VPS	5	5 V supply voltage	AMIF2IN1	33	AM IF2 input1
HFBUS1	6	HF bus, pull-up to 5 V	AMIF2IN2	34	AM IF2 input2
HDBUS2	7	HF bus, pull-up to 5 V	FMIN2	35	FM limiter input
XTAL1	8	crystal oscillator	DCFEED	36	DC feed FM limiter
XTAL2	9	crystal oscillator	FMIN1	37	FM limiter input
F <sub>REFP</sub>	10	PLL reference frequency	LEVELADJ	38	level adjust
F <sub>REFN</sub>	11	PLL reference frequency	C <sub>AFC</sub>	39	AFC capacitor
I <sub>REF</sub>	12	reference current	MPBUF	40	multipath buffer time constant
FMIF1IN1	13	70 MHz FM-IF input	OUTLEFT	41	AF output left
FMIF1IN2	14	70 MHz FM-IF input	FMSTOP	42	FMSTOP adjust
TSDR	15	time constant for SDR	RDS/AMSTOP	43	MPX for RDS/AMSTOP adjust
TSDS	16	time constant for SDS	OUTRIGHT	44	AF output right
V <sub>SDS</sub>	17	SDS control voltage	MPXIN	45	stereo decoder MPX input
V <sub>SDR</sub>	18	SDR control voltage	IAC <sub>IN</sub>	46	IAC input
FMIF2OUT1	19	FM mixer output	MPXOUT	47	FM demodulator MPX output
FMIF2OUT2	20	FM mixer output	AMAFOUT	48	AM demodulator AF output
V <sub>REF</sub>	21	reference voltage	V <sub>MUTAML</sub>	49	mute voltage / AM level
AMIF2OUT1	22	AM mixer output	LEVELUNWEIG	50	level unweighted
AMIF2OUT2	23	AM mixer output	IACCONTR	51	IAC control voltage
FMAMDEC	24	FM/AM 10.7 MHz decoupling	V <sub>PDIG</sub>	52	V <sub>p</sub> digital
PHASEDET	25	phase detector	SDA	53	SDA, pull-up to 5 V
PILDET	26	pilot detector	SCL	54	SCL, pull-up to 5 V
FMAM10.7	27	FM/AM 10.7 MHz input	BUSGND	55	bus ground
V <sub>PIF</sub>	28	V <sub>p</sub> IF amplifier	V <sub>P8.5</sub>	56	V <sub>p</sub> 8.5 V

TEA6811 IC91 RF IC

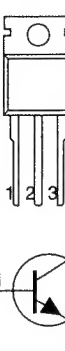
SYMBOL	PIN	DESCRIPTION	SYMBOL	PIN	DESCRIPTION
GNDANF	1	analog ground 5 V	GNDAMM	21	ground AMMIXER
VCCANF	2	analog supply 5 V	AMPREO	22	AMPREAMP output
LCKDET	3	lock detector flag	NC	23	
SDA	4	I2C bus data	AMSBI	24	AM feedback switch SB1
SCL	5	I2C bus clock	AMSBI	25	AM feedback switch SB2
FREFN	6	ref frequency from I2C N-terminal	AMPREI	26	AMPREAMP input
FREFP	7	ref frequency from I2C P-terminal	AMCAGC	27	AM AGC capacitor
GNDDIF	8	digital ground	AMCPRE	28	AM preamp decoupling capacitor
VCCDIF	9	digital supply 5 V	GNDRF	29	RF ground
NC	10		FMRFIP	30	FM MIXER inputs RF
FMIFON	11	outputs of FM-mixer of first IF (72.2 MHz)	FMRFIN	31	
FMIFOP	12		IPIDIO	32	pin diode drive
VCCE	13	analog supply 8.5 V	FMAGC	33	FM AGC integrating capacitor
GNDE	14	analog ground 8.5 V	REFAGC	34	FM AGC reference voltage
AMMOP	15	outputs of AMMIXER of first IF (10.7 MHz)	OSCFDB	35	oscillator FEEDBACK input
AMMON	16		GNDOSC	36	oscillator ground
NC	17		OSCTNK	37	oscillator tank output
AMMIN	18	AMMIXER input RF	VCCOSC	38	supply voltage VCO
VREF	19	reference voltage from AMBANDGAP	VTUNE	39	tuning voltage
NC	20		CHPOUT	40	charge pump output



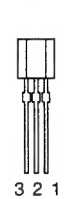
BC847B / BF840



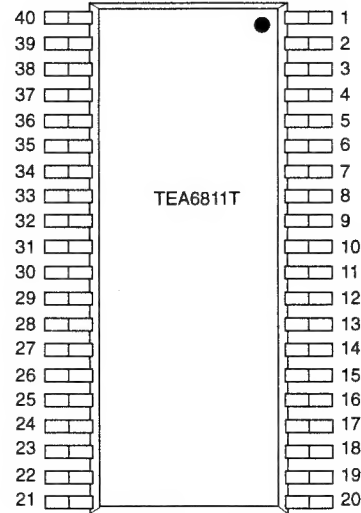
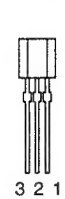
BD241



BC547



BC636



22RC268/00

22RC268/80

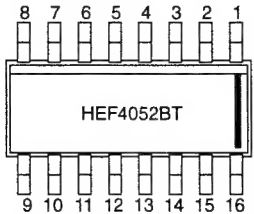
22RC284/00

22RC288/00

22RC288/80

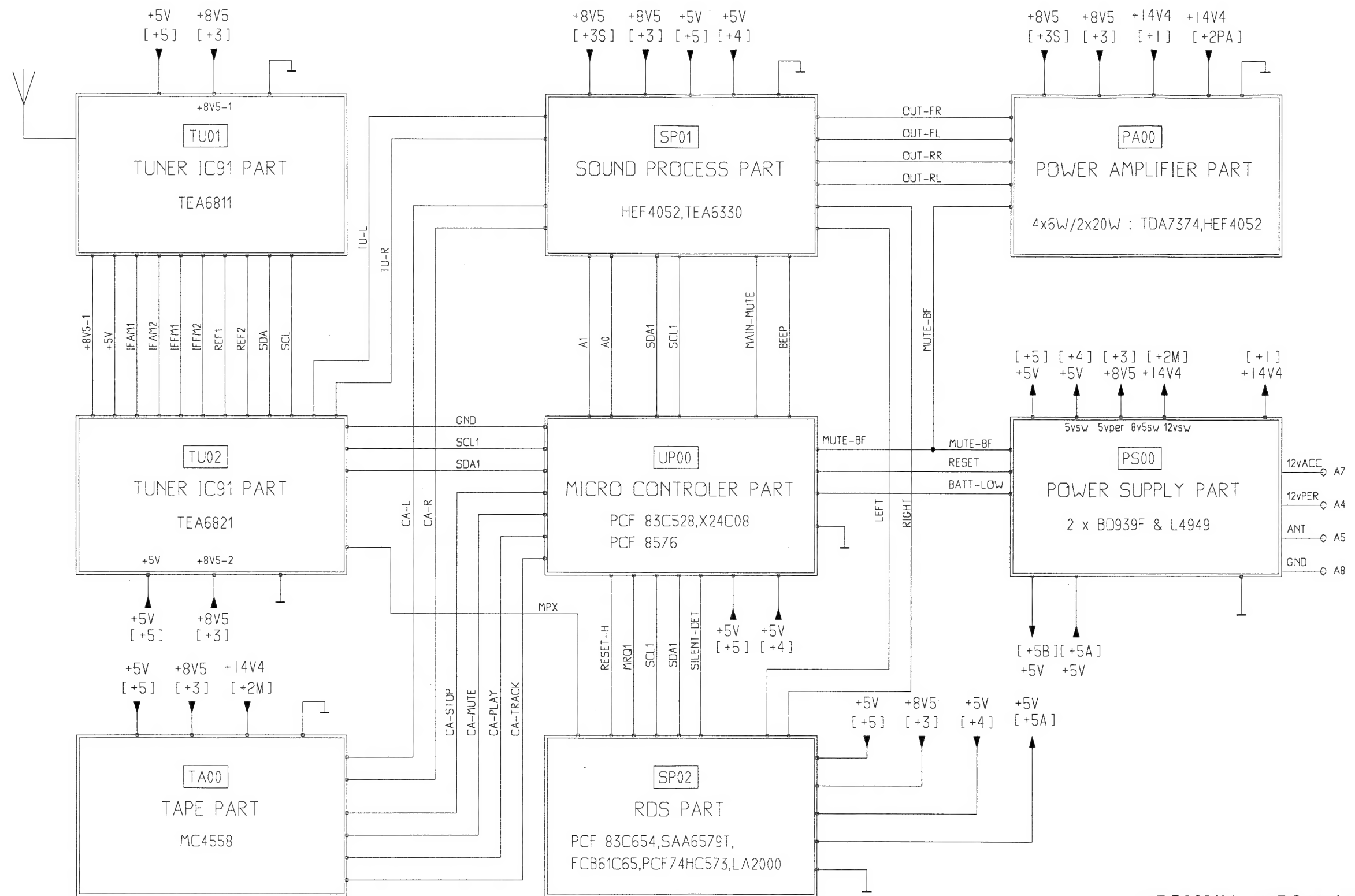
HEF4052BT Dual 4 channel analogue multi/demultiplexer

SYMBOL	PIN	DESCRIPTION
Y <sub>0B</sub>	1	independant input/output 0 <sub>B</sub>
Y <sub>2B</sub>	2	independant input/output 2 <sub>B</sub>
Z <sub>B</sub>	3	common input/output B
Y <sub>3B</sub>	4	independant input/output 3 <sub>B</sub>
Y <sub>1B</sub>	5	independant input/output 1 <sub>B</sub>
E	6	enable input (active LOW)
V <sub>EE</sub>	7	ground
V <sub>SS</sub>	8	ground
A <sub>1</sub> / A <sub>0</sub>	9 / 10	address input 1 / address input 0
Y <sub>3A</sub> / Y <sub>0A</sub>	11 / 12	independant input/output 3 <sub>A</sub> / 0 <sub>A</sub>
Z <sub>A</sub>	13	common input/output A
Y <sub>1A</sub> / Y <sub>2A</sub>	14 / 16	independant input/output 1 <sub>A</sub> / 2 <sub>A</sub>
V <sub>DD</sub>	16	supply



FUNCTION TABLE

inputs			channel ON
E	A <sub>1</sub>	A <sub>0</sub>	
L	L	L	Y <sub>0A</sub> -Z <sub>A</sub> ; Y <sub>0B</sub> -Z <sub>B</sub>
L	L	H	Y <sub>1A</sub> -Z <sub>A</sub> ; Y <sub>1B</sub> -Z <sub>B</sub>
L	H	L	Y <sub>2A</sub> -Z <sub>A</sub> ; Y <sub>2B</sub> -Z <sub>B</sub>
L	H	H	Y <sub>3A</sub> -Z <sub>A</sub> ; Y <sub>3B</sub> -Z <sub>B</sub>
H	X	X	none

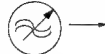





































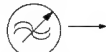















22RC268/00 22RC268/80  
 22RC284/00 22RC288/00  
 22RC288/80



CHECK AND ALIGNMENT

For checking and adjusting see general procedures

Check	SK				Setting of controls		
Demodulated FM levels	FM	98 MHz 1 mV $\Delta f=22.5$ KHz f mod = 1 KHz				 210 mV $\pm$ 40 mV	
		98 MHz 1 mV $\Delta f = 6.75$ KHz f mod = 19 KHz				 60 mV $\pm$ 10 mV	
		98 MHz 1 mV $\Delta f = 1.2$ KHz f mod = 57 KHz				 10 mV $\pm$ 5 mV	
Demodulated AM level	MW	1053 KHz 1 mV 1 KHz, 30% AM				250 mV $\leq$  $\leq$ 350 mV 	
VC FM	FM			87.5 MHz		 > 1.2 V	
				108 MHz		 < 5.5 V	
VC AM	LW			144 KHz		 > 1.2 V	
	MW			1629 KHz		 < 7.0 V	
FM Mute	FM	93 MHz 1mV				  0 dB (775 mV)	
		No signal				  < -10 dB	
0 Discriminator						 3.4 V $\pm$ 400 mV	
Reference oscillator frenquencies						 61.5 MHz $\pm$ 3kHz   11.5 MHz $\pm$ 0.5%  4.332 MHz $\pm$ 100 Hz	
Pause detector	FM	98 MHz 1 mV $\Delta f = 1.5$ KHz f mod = 1 KHz				 $\leq$ 0.8 V	
		98 MHz 1 mV $\Delta f = 3.5$ KHz f mod = 1 KHz				 $\geq$ 0.8 V	
RDS check	Set OFF : put the pin 1 of 7652 to GND. Switch ON the set : pin 44 of 7652 must be held at HIGH level during 1.8 s $\pm$ 0.1						

Alignment	SK					
RF Oscillator and IF coils	FM	88 MHz 20 $\mu$ V no AF signal		88 MHz	5201	 1.35 V $\pm$ 50 mV
	FM	93 MHz <20 $\mu$ V no AF signal		93 MHz	5209 5210	Max DC voltage on pin 50 of IC 7300
	FM	93 MHz 20 $\mu$ V no AF signal		93 MHz	5208	Max DC voltage on pin 50 of IC 7300
	AM	1053 KHz 70 $\mu$ V 1 kHz 30%		1053 KHz	5301	Max DC voltage on pin 50 of IC 7300
Audio limiting	FM	98 MHz 1 mV $\Delta f = 22.5$ KHz $f_{mod} = 1$ KHz				  0 dB (775 mV)
		98 MHz 6 $\mu$ V $\Delta f = 22.5$ KHz $f_{mod} = 1$ KHz			3321	  -3 dB

Current and Voltages

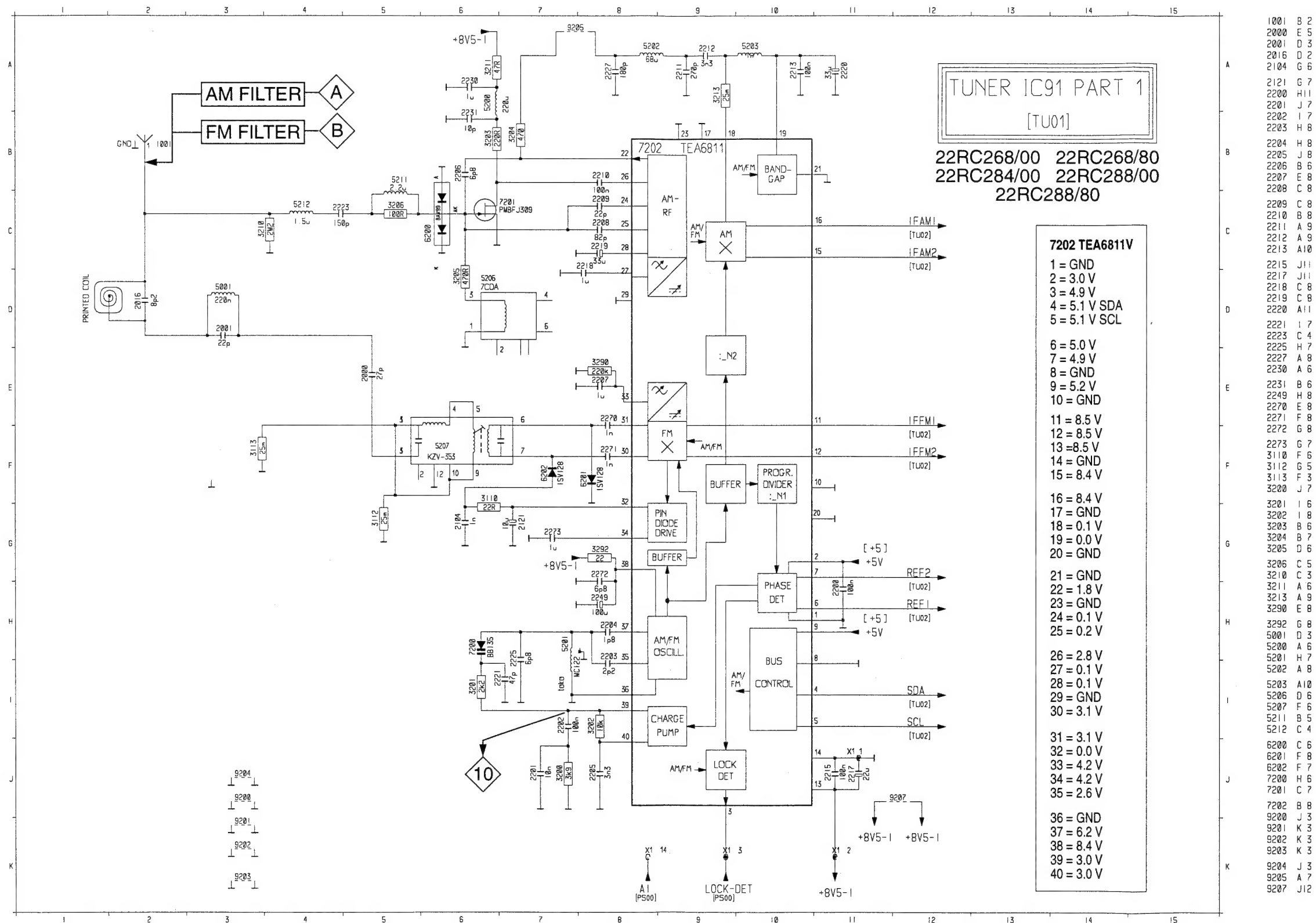
SET OFF	Voltage	+ ACC ON	V reset Pin 4 $\mu$ C	Vdd $\mu$ C pin 38 $\mu$ C	V hold pin 8 $\mu$ C	+ ACC OFF
accu supply	+14.4 V	< 3mA	min 0.8 V	min 4.8 V max 5.2 V	max 0.8 V	< 3mA

SET ON

V reset Pin 4 $\mu$ C	Vdd $\mu$ C pin 38 $\mu$ C		V hold pin 8 $\mu$ C		V 5V E 7501		V 8.5 V E 7502		V EEprom Pin 8	
max 0.8 V	min 4.8 V	mx 5.2 V	min 2 V	max 5.3 V	min 4.6 V	max 5.4 V	min 8.0 V	max 9.0 V	min 4.9 V	max 5.1 V

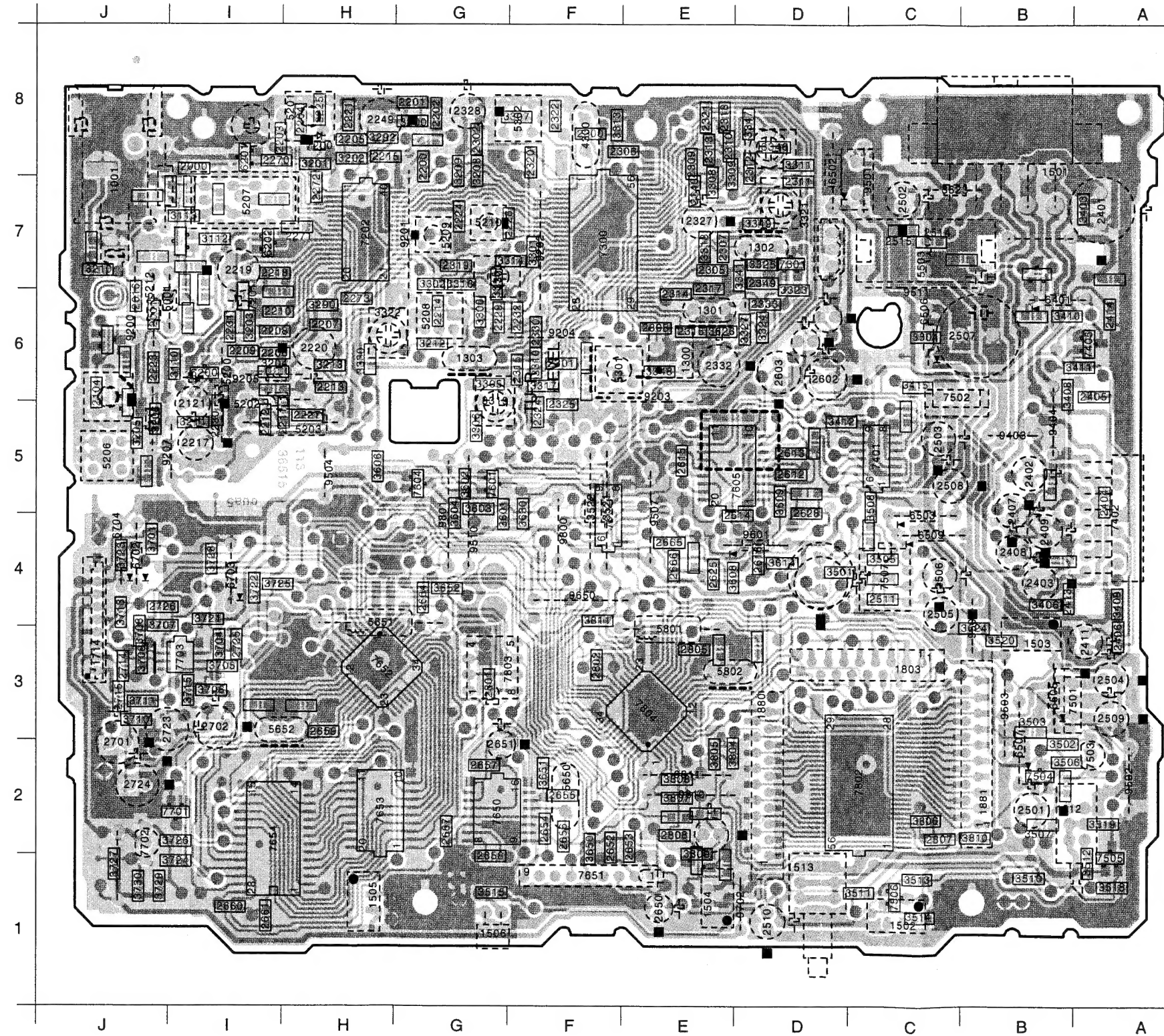
22RC268/00  
22RC268/80  
22RC284/00  
22RC288/00  
22RC288/80



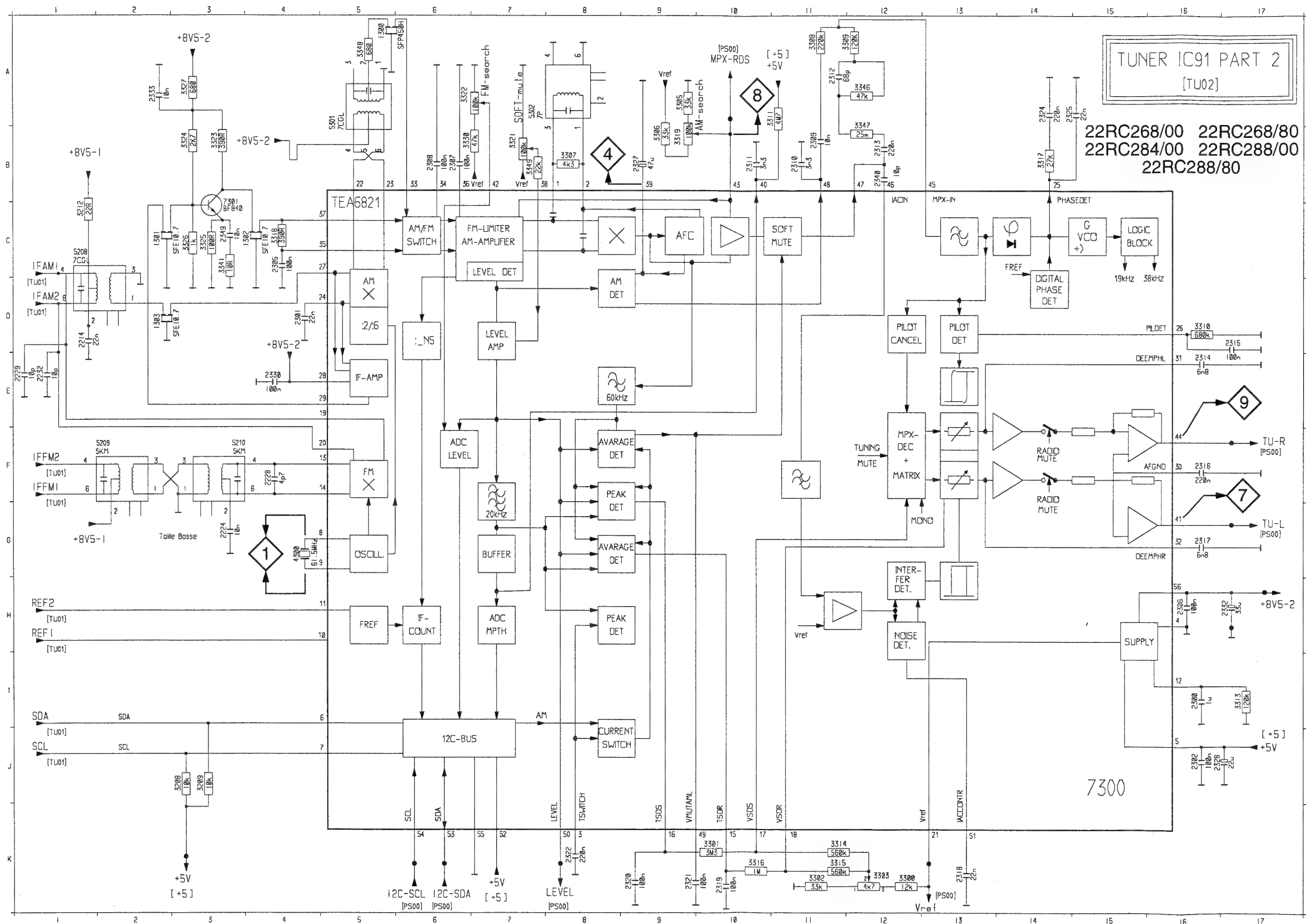


1001 J 8	1506 G 1	2220 H 6	2409 B 5	2509 A 3	3303 G 7	5201 H 8	5301 F 6	6503 C 5	7502 C 6	9204 F 7	9507 E 5
1300 E 6	1512 B 2	2249 H 8	2411 A 4	2510 D 1	3319 G 6	5202 I 6	5302 F 8	6505 B 3	7503 A 3	9205 I 6	9510 G 5
1301 E 7	1513 D 2	2327 E 8	2501 B 2	2602 D 6	3321 D 8	5203 H 6	5503 C 7	6506 C 7	7507 C 4	9207 I 6	9511 C 7
1302 D 7	1714 J 4	2328 G 8	2502 C 8	2603 D 6	3322 H 7	5206 J 5	5650 F 2	6507 B 3	7651 F 2	9403 B 6	9601 D 5
1303 G 6	1803 C 4	2332 E 6	2503 C 6	2650 E 1	3521 F 5	5207 I 8	5651 H 4	6509 C 5	7702 J 2	9404 B 6	9650 F 4
1501 B 8	1880 D 2	2401 A 8	2504 A 3	2651 G 3	3522 F 5	5208 G 7	5652 H 3	6702 J 5	7803 G 4	9501 C 8	9702 D 2
1502 C 1	1881 B 2	2402 B 5	2505 C 4	2701 J 3	3523 C 8	5209 G 7	5801 E 4	6703 I 4	9200 J 7	9502 A 3	9800 F 5
1503 B 4	2121 I 6	2403 B 4	2506 C 4	2702 I 3	4300 F 8	5210 G 8	5802 E 4	6704 J 5	9201 G 7	9503 B 3	9801 G 5
1504 E 2	2217 I 6	2407 B 5	2507 B 7	2723 J 3	5001 I 7	5211 J 6	6401 B 7	7402 A 5	9202 F 7	9504 H 5	9810 E 2
1505 H 2	2219 I 7	2408 B 5	2508 C 5	2724 J 3	5200 I 6	5212 J 7	6502 D 8	7501 A 3	9203 E 6	9506 B 4	9811 E 3

22RC268/00  
22RC268/80  
22RC284/00  
22RC288/00  
22RC288/80



2000 I 8	2652 F 2	3502 B 3	7653 H 2
2001 J 7	2653 E 2	3503 B 3	7654 I 2
2016 J 7	2654 F 2	3504 C 7	7701 I 2
2104 J 6	2655 F 2	3505 C 5	7703 I 4
2200 G 8	2656 F 2	3506 B 3	7802 C 3
2201 G 8	2657 G 3	3507 B 2	7804 E 3
2202 G 8	2658 G 2	3508 C 5	
2203 H 8	2659 H 3	3510 B 2	
2204 H 8	2660 I 1	3511 C 2	
2205 H 8	2661 I 1	3512 A 2	
2206 I 6	2664 G 4	3513 C 2	
2207 H 7	2665 E 5	3514 C 1	
2208 I 7	2666 E 4	3515 G 2	
2209 I 6	2667 G 2	3518 A 2	
2210 I 7	2714 J 4	3519 A 2	
2211 H 6	2715 J 3	3520 B 4	
2212 I 6	2725 I 4	3524 B 4	
2213 H 6	2726 J 4	3601 G 5	
2214 G 7	2801 G 3	3602 G 5	
2215 H 8	2802 F 4	3603 G 5	
2218 I 7	2805 E 4	3604 G 5	
2221 H 8	2807 C 2	3606 H 5	
2223 J 6	2808 E 2	3608 D 4	
2224 G 8	3110 I 6	3609 D 5	
2225 H 8	3112 I 7	3614 D 5	
2227 H 6	3113 I 8	3630 F 5	
2228 F 8	3200 G 8	3650 F 2	
2229 G 7	3201 H 8	3651 F 3	
2230 I 6	3202 H 8	3652 G 4	
2231 I 7	3203 I 7	3701 J 5	
2232 F 7	3204 I 6	3704 I 4	
2270 I 8	3205 J 6	3705 I 4	
2271 H 7	3206 J 6	3706 I 3	
2272 H 8	3208 G 8	3707 J 4	
2273 H 7	3209 G 8	3708 J 4	
2300 F 8	3210 J 7	3709 J 4	
2301 F 6	3211 I 6	3710 J 3	
2302 G 8	3212 G 6	3711 J 3	
2305 E 7	3213 H 6	3713 J 4	
2306 E 8	3290 H 7	3715 I 3	
2307 E 7	3292 H 8	3721 I 4	
2308 E 7	3300 G 7	3722 I 4	
2309 E 8	3301 F 7	3723 J 5	
2310 E 8	3302 G 7	3724 I 2	
2311 D 8	3305 G 6	3725 I 4	
2312 D 8	3306 G 6	3726 I 2	
2313 E 8	3307 F 8	3727 J 2	
2314 E 7	3308 E 8	3728 I 5	
2315 F 6	3309 E 8	3729 J 2	
2316 E 7	3310 F 6	3730 J 2	
2317 E 7	3311 D 8	3804 D 3	
2318 E 8	3313 F 8	3805 E 3	
2319 G 7	3314 F 7	3806 C 2	
2320 F 8	3315 G 7	3807 E 2	
2321 E 8	3316 G 7	3808 E 3	
2322 F 8	3317 F 6	3809 E 2	
2324 F 6	3318 E 7	3810 B 2	
2325 F 6	3323 D 7	3811 F 4	
2330 F 7	3324 D 7	6200 I 6	
2333 D 7	3325 D 7	6201 I 8	
2340 E 8	3326 E 7	6202 I 7	
2349 D 7	3327 D 7	7200 H 8	
2404 A 5	3330 H 6	7201 I 7	
2405 A 6	3341 D 7	7202 H 7	
2406 A 4	3346 D 8	7300 F 7	
2413 B 4	3347 D 8	7301 D 7	
2414 A 7	3348 E 6	7401 C 5	
2511 C 4	3349 D 8	7405 A 6	
2514 C 7	3403 A 8	7504 B 3	
2515 C 7	3406 B 4	7505 A 2	
2612 D 5	3408 B 6	7506 C 2	
2613 D 5	3409 A 4	7601 G 5	
2614 D 5	3410 B 7	7602 F 5	
2615 E 5	3411 A 6	7604 G 5	
2616 D 5	3412 D 6	7605 E 5	
2625 E 4	3415 C 6	7650 G 2	
2628 D 5	3501 D 4	7652 H 4	



TUNER IC91 PART 2  
[TU02]

22RC268/00 22RC268/80  
22RC284/00 22RC288/00  
22RC288/80

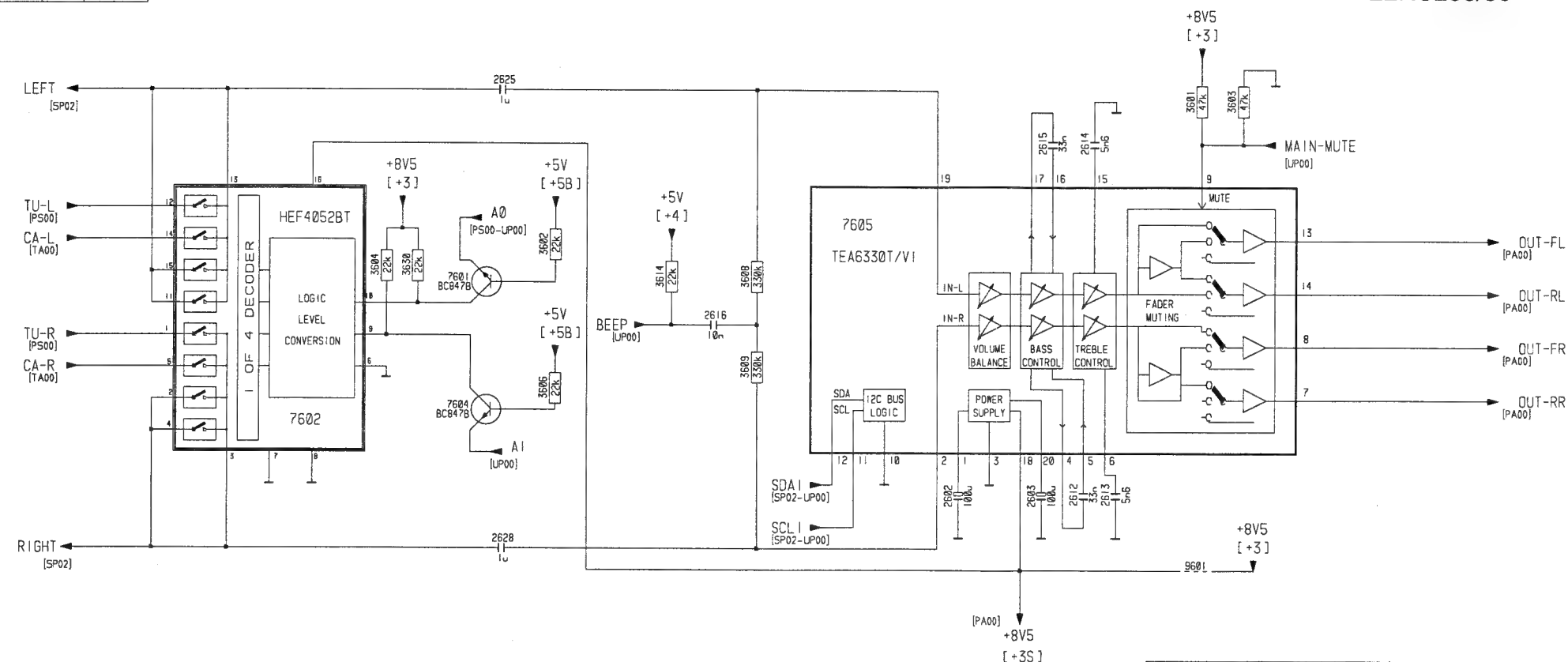
**7300 TEA6821T/V2**

1 = 4.0 V
2 = 4.0 V
3 = 0.8 V
4 = GND
5 = 5.0 V
6 = 5.0 V SDA
7 = 5.0 V SCL
8 = 61.5 MHz
9 = 61.5 MHz
10 = 5.0 V
11 = 4.9 V
12 = 4.2 V
13 = 2.3 V
14 = 2.3 V
15 = N.C.
16 = 5.0 V
17 = 2.5 V
18 = 1.4 V
19 = 8.4 V
20 = 8.4 V
21 = 5.0 V
22 = 8.5 V
23 = 8.5 V
24 = 3.0 V
25 = 4.7 V
26 = 2.7 V
27 = 2.9 V
28 = 8.5 V
29 = 6.2 V
30 = 1.8 V
31 = 2.3 V
32 = 2.3 V
33 = 0.7 V
34 = 1.0 V
35 = 2.7 V
37 = 2.7 V
38 = 1.7 V
39 = 3.3 V
40 = 0.7 V
41 = 3.5 V
42 = 1.9 V
43 = 3.0 V
44 = 3.4 V
45 = 2.8 V
46 = 3.2 V
47 = 3.2 V
48 = 4.5 V
49 = 5.0 V
50 = 5.2 V
51 = 4.9 V
52 = 5.1 V
53 = 5.1 V
54 = 5.1 V
55 = GND
56 = 8.5 V

IC HEF4052BT		
pin9 A1	pin10 A0	MODE
L	L	TU
L	H	CA
H	L	BEEP
H	H	--

# SOUND PROCESS PART 1 [ SP01 ]

22RC268/00 22RC268/80  
22RC284/00 22RC288/00  
22RC288/80



7602 HEF 4052BT	
1 = 3.8 V	9 = See truth table
2 = 3.8 V	10 = See truth table
3 = 3.8 V	11 = 3.7 V
4 = 3.8 V	12 = 3.7 V
5 = 4.0 V	13 = 3.7 V
6 = GND	14 = 4.19 V
7 = GND	15 = 3.7 V
8 = GND	16 = 8.5 V

7605 TEA 6330	
1 = 8.6 V	11 = 5.1 V SCL
2 = 4.3 V	12 = 5.1 V SDA
3 = GND	13 = 4.5 V
4 = 4.5 V	14 = 4.5 V
5 = 4.5 V	15 = 4.5 V
6 = 4.5 V	16 = 4.5 V
7 = 4.5 V	17 = 4.5 V
8 = 4.5 V	18 = 8.5 V
9 = 4.5 V	19 = 4.4 V
10 = GND	20 = 4.5 V

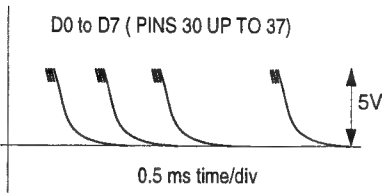
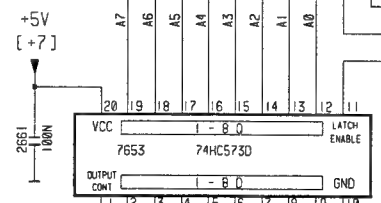
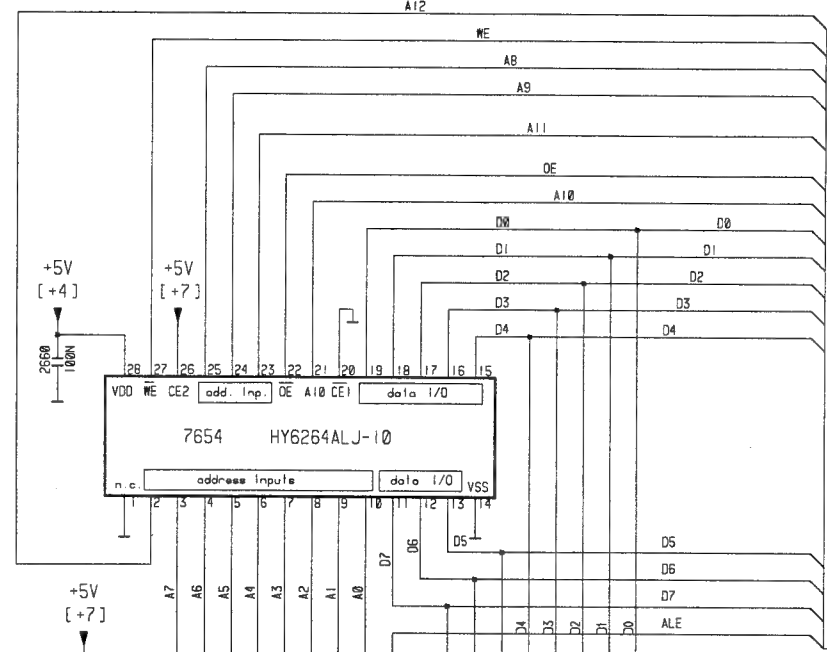
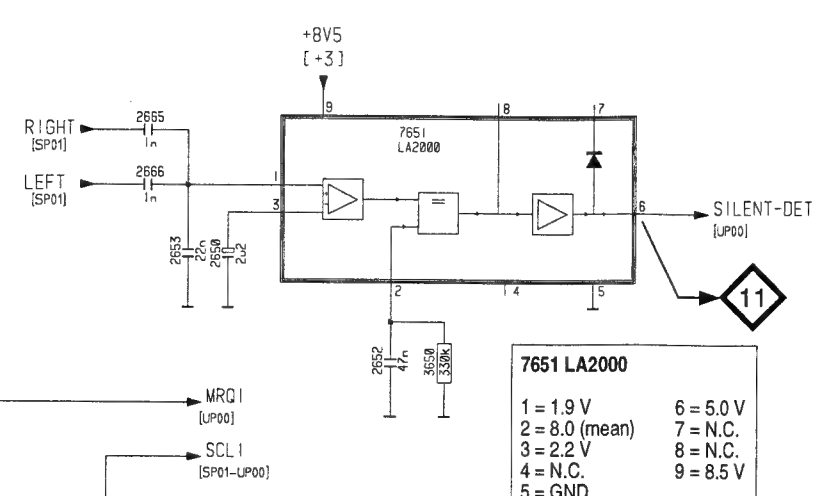
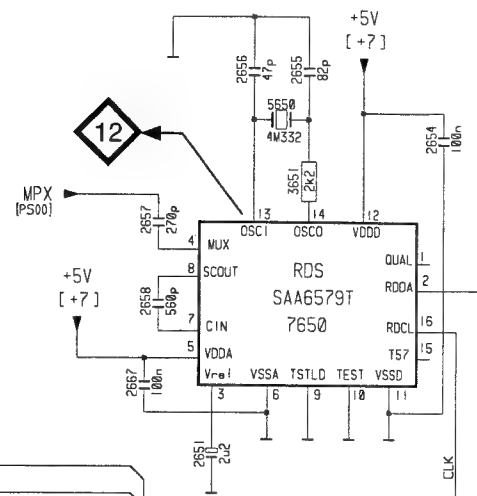
2602	G10
2603	G11
2612	G11
2613	G11
2614	D11
2615	D11
2616	E 8
2625	C 6
2628	H 6
3601	C12
3602	E 6
3603	C12
3604	E 4
3606	F 6
3608	E 8
3609	F 8
3614	E 7
3630	E 5
7601	E 5
7602	F 4
7604	F 5
7605	E 9
9601	H12

# SOUND PROCESS PART 2 [ SP02 ]

22RC268/00 22RC268/80  
22RC284/00 22RC288/00  
22RC288/80

7650 SAA6579T

1 = N.C.	9 = GND
2 = 3.2 V	10 = GND
3 = 2.6 V	11 = GND
4 = 2.3 V	12 = 5.0 V
5 = 5.0 V	13 = 4.332 MHz
6 = GND	14 = 4.332 MHz
7 = 2.2 V	15 = N.C.
8 = 0.0 V	16 = 3.4 V

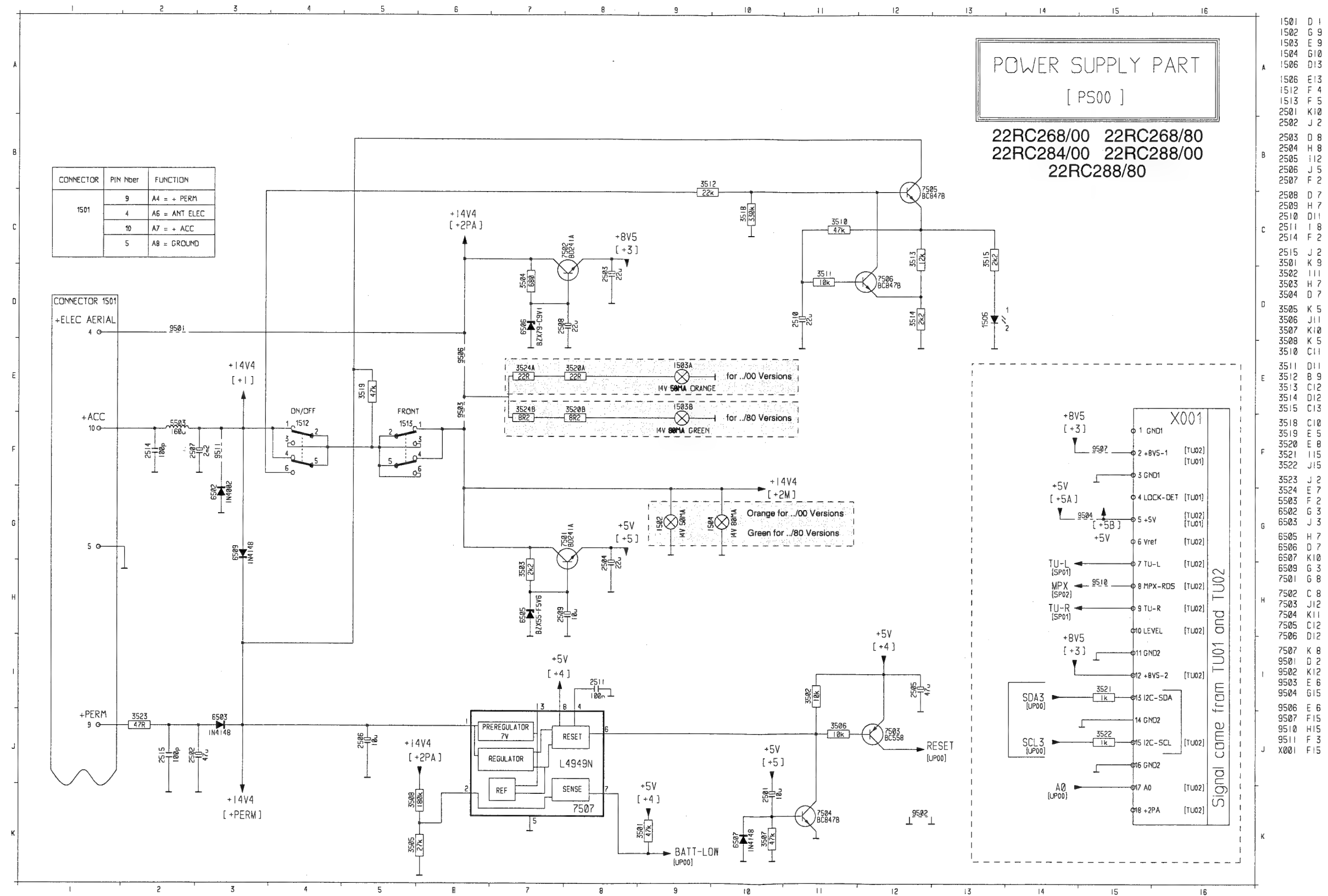


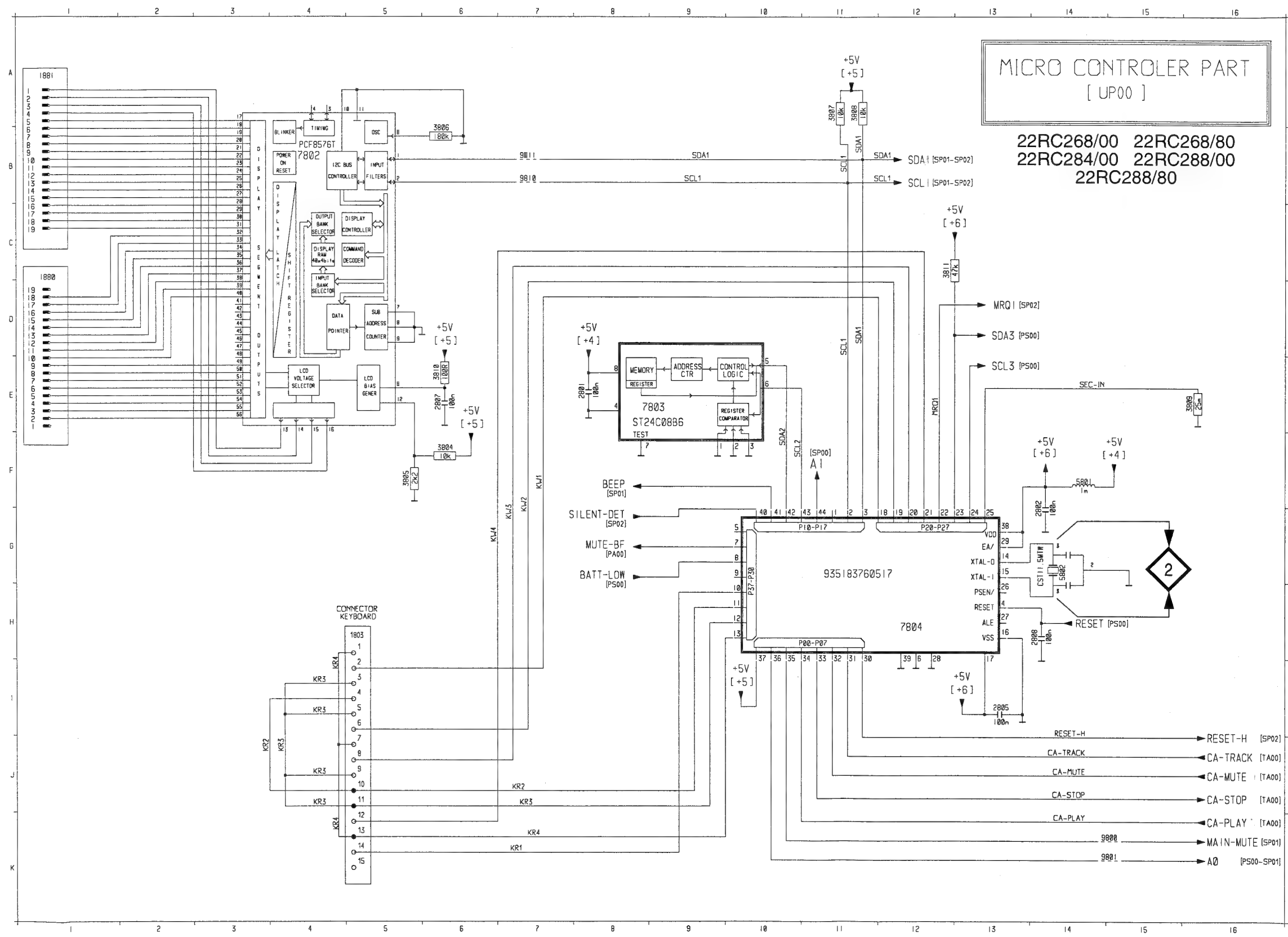
7652 PCF83C654

1 = Test2	12 = 4.9 V	23 = N.C.	34
2 = 5.0 V SCL	13 = 4.9 V	24 = N.C.	35
3 = 5.0 V SDA	14 = 11.5 MHz	25 = N.C.	36
4 = OFF → ON	15 = 11.5 MHz	26 = N.C.	37
5 = N.C.	16 = GND	27 = 0.0 V	38 = 5.0 V
6 = GND	17 = 5.0 V	28 = GND	39 = GND
7 = N.C.	18 = 4.9 V	29 = 5.0 V	40 = N.C.
8 = 1.2 KHz	19 = 4.9 V	30	41 = 5.0 V
9 = N.C.	20 = 4.9 V	31	42 = N.C.
10 = N.C.	21 = 4.9 V	32	43 = N.C.
11 = 3.2 V	22 = 4.9 V	33	44 = Test 1

2650 B12  
2651 D 8  
2652 C13  
2653 B12  
2654 B10  
2655 A 9  
2656 A 8  
2657 B 7  
2658 C 7  
2659 H13  
2660 G 2  
2661 I 2  
2664 F13  
2665 A11  
2666 B11  
2667 C 7  
3650 C14  
3651 B 9  
3652 G15  
5650 A 8  
5651 E14  
5652 G14  
7650 C 8  
7651 A13  
7652 G12  
7653 I 3  
7654 G 3  
9650 F15  
X601 E11  
X602 E11







MICRO CONTROLLER PART  
[ UP00 ]

22RC268/00 22RC268/80  
22RC284/00 22RC288/00  
22RC288/80

- 1803 H 5
- 1880 D 1
- 1881 A 1
- 2801 E 8
- 2802 G 4
- 2805 I 3
- 2807 E 6
- 2808 H 4
- 3804 F 6
- 3805 F 5
- 3806 B 6
- 3807 A 1
- 3808 A 1
- 3809 E 16
- 3810 E 6
- 3811 C 12
- 5801 F 14
- 5802 G 4
- 7802 B 4
- 7803 E 8
- 7804B H 2
- 9800 K 15
- 9801 K 15
- 9810 B 7
- 9811 B 7

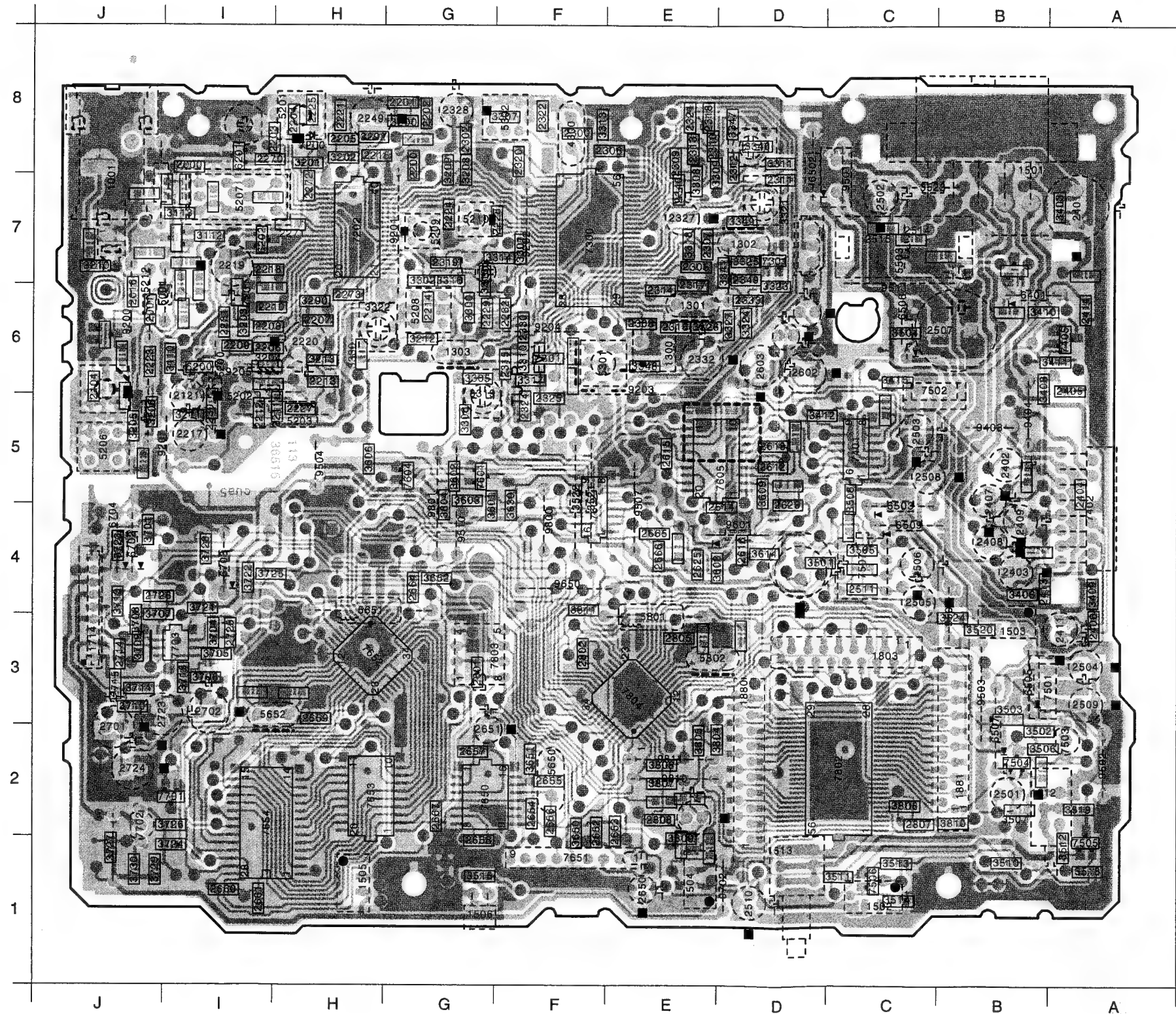
**7804 PCF83C528**

1 = N.C.  
2 = 5.0 V SCL1  
3 = 5.0 V SDA1  
4 = OFF → ON  
5 = N.C.  
6 = GND  
7 = 0.0 V  
8 = 5.0 V → 0.3 V when BAT < 10.3 V  
9 = N.C.  
10 = 4.9 V  
11 = 4.9 V  
12 = 4.9 V  
13 = 4.9 V  
14 = 11.5 MHz  
15 = 11.5 MHz  
16 = GND  
17 = 5.0 V  
18 = 0.0 V  
19 = 0.0 V  
20 = 0.0 V  
21 = 0.0 V  
22 = 4.9 V  
23 = 4.9 V SDA3  
24 = 4.9 V SCL3  
25 = 0.0 V  
26 = N.C.  
27 = N.C.  
28 = GND  
29 = 5.0 V  
30 = OFF → ON  
31 = 5.0 V NORM / 0.0 V REVERSE  
32 = 0.0 V CAS ON / 4.0 V MUTE CAS.  
33 = 0.7 V  
34 = 4.2 V CAS / 0.0 V RAD  
35 = 4.2 CAS ON  
36 = SEE TRUTH TABLE 7602  
37 = 5.0 V  
38 = 5.0 V  
39 = GND  
40 = 5.0 V SOUND / 0.0 V SILENCE.  
41 = 5.0 V NO BLEEP  
42 = 4.9 V SDA2  
43 = 4.9 V SCL2  
44 = SEE TRUTH TABLE 7602

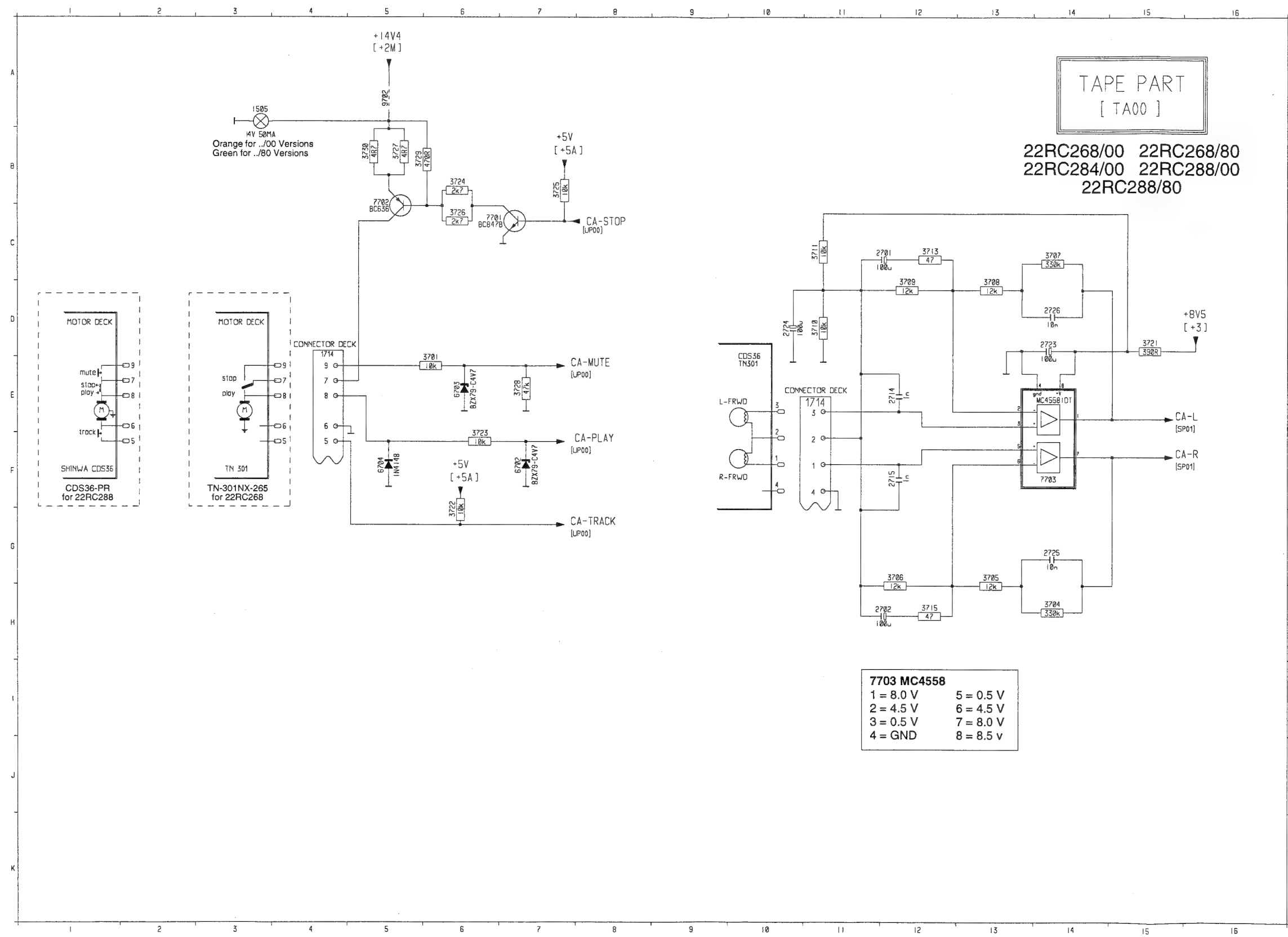


1001 J 8	1506 G 1	2220 H 6	2409 B 5	2509 A 3	3303 G 7	5201 H 8	5301 F 6	6503 C 5	7502 C 6	9204 F 7	9507 E 5
1300 E 6	1512 B 2	2249 H 8	2411 A 4	2510 D 1	3319 G 6	5202 I 8	5302 F 8	6505 B 3	7503 A 3	9205 I 6	9510 G 5
1301 E 7	1513 D 2	2327 E 8	2501 B 2	2602 D 6	3321 D 8	5203 H 6	5503 C 7	6506 C 7	7507 C 4	9207 I 6	9511 C 7
1302 D 7	1714 J 4	2328 G 8	2502 C 8	2603 D 6	3322 H 7	5206 J 5	5650 F 2	6507 B 3	7651 F 2	9403 B 6	9601 D 5
1303 G 6	1803 C 4	2332 E 6	2503 C 6	2650 E 1	3521 F 5	5207 I 8	5651 H 4	6509 C 5	7702 J 2	9404 B 6	9650 F 4
1501 B 8	1880 D 2	2401 A 8	2504 A 3	2651 G 3	3522 F 5	5208 G 7	5652 H 3	6702 J 5	7803 G 4	9501 C 8	9702 D 2
1502 C 1	1881 B 2	2402 B 5	2505 C 4	2701 J 3	3523 C 8	5209 G 7	5801 E 4	6703 I 4	9200 J 7	9502 A 3	9800 F 5
1503 B 4	2121 I 6	2403 B 4	2506 C 4	2702 I 3	4300 F 8	5210 G 8	5802 E 4	6704 J 5	9201 G 7	9503 B 3	9801 G 5
1504 E 2	2217 I 6	2407 B 5	2507 B 7	2723 J 3	5001 I 7	5211 J 6	6401 B 7	7402 A 5	9202 F 7	9504 H 5	9810 E 2
1505 H 2	2219 I 7	2408 B 5	2508 C 5	2724 J 3	5200 I 6	5212 J 7	6502 D 8	7501 A 3	9203 E 6	9506 B 4	9811 E 3

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22RC284/00  
22RC288/00  
22RC288/80



2000 I 8	2652 F 2	3502 B 3	7653 H 2
2001 J 7	2653 E 2	3503 B 3	7654 I 2
2016 J 7	2654 F 2	3504 C 7	7701 I 2
2104 J 6	2655 F 2	3505 C 5	7703 I 4
2200 G 8	2656 F 2	3506 B 3	7802 C 3
2201 G 8	2657 G 3	3507 B 2	7804 E 3
2202 G 8	2658 G 2	3508 C 5	
2203 H 8	2659 H 3	3510 B 2	
2204 H 8	2660 I 1	3511 C 2	
2205 H 8	2661 I 1	3512 A 2	
2206 I 6	2664 G 4	3513 C 2	
2207 H 7	2665 E 5	3514 C 1	
2208 I 7	2666 E 4	3515 G 2	
2209 I 6	2667 G 2	3518 A 2	
2210 I 7	2714 J 4	3519 A 2	
2211 H 6	2715 J 3	3520 B 4	
2212 I 6	2725 I 4	3524 B 4	
2213 H 6	2726 J 4	3601 G 5	
2214 G 7	2801 G 3	3602 G 5	
2215 H 8	2802 F 4	3603 G 5	
2218 I 7	2805 E 4	3604 G 5	
2221 H 8	2807 C 2	3606 H 5	
2223 J 6	2808 E 2	3608 D 4	
2224 G 8	3110 I 6	3609 D 5	
2225 H 8	3112 I 7	3614 D 5	
2227 H 6	3113 I 8	3630 F 5	
2228 F 8	3200 G 8	3650 F 2	
2229 G 7	3201 H 8	3651 F 3	
2230 I 6	3202 H 8	3652 G 4	
2231 I 7	3203 I 7	3701 J 5	
2232 F 7	3204 I 6	3704 I 4	
2270 I 8	3205 J 6	3705 I 4	
2271 H 7	3206 J 6	3706 I 3	
2272 H 8	3208 G 8	3707 J 4	
2273 H 7	3209 G 8	3708 J 4	
2300 F 8	3210 J 7	3709 J 4	
2301 F 6	3211 I 6	3710 J 3	
2302 G 8	3212 G 6	3711 J 3	
2305 E 7	3213 H 6	3713 J 4	
2306 E 8	3290 H 7	3715 I 3	
2307 E 7	3292 H 8	3721 I 4	
2308 E 7	3300 G 7	3722 I 4	
2309 E 8	3301 F 7	3723 J 5	
2310 E 8	3302 G 7	3724 I 2	
2311 D 8	3305 G 6	3725 I 4	
2312 D 8	3306 G 6	3726 I 2	
2313 E 8	3307 F 8	3727 J 2	
2314 E 7	3308 E 8	3728 I 5	
2315 F 6	3309 E 8	3729 J 2	
2316 E 7	3310 F 6	3730 J 2	
2317 E 7	3311 D 8	3804 D 3	
2318 E 8	3313 F 8	3805 E 3	
2319 G 7	3314 F 7	3806 C 2	
2320 F 8	3315 G 7	3807 E 2	
2321 E 8	3316 G 7	3808 E 3	
2322 F 8	3317 F 6	3809 E 2	
2324 F 6	3318 E 7	3810 B 2	
2325 F 6	3323 D 7	3811 F 4	
2330 F 7	3324 D 7	6200 I 6	
2333 D 7	3325 D 7	6201 I 8	
2340 E 8	3326 E 7	6202 I 7	
2349 D 7	3327 D 7	7200 H 8	
2404 A 5	3330 H 6	7201 I 7	
2405 A 6	3341 D 7	7202 H 7	
2406 A 4	3346 D 8	7300 F 7	
2413 B 4	3347 D 8	7301 D 7	
2414 A 7	3348 E 6	7401 C 5	
2511 C 4	3349 D 8	7405 A 6	
2514 C 7	3403 A 8	7504 B 3	
2515 C 7	3406 B 4	7505 A 2	
2612 D 5	3408 B 6	7506 C 2	
2613 D 5	3409 A 4	7601 G 5	
2614 D 5	3410 B 7	7602 F 5	
2615 E 5	3411 A 6	7604 G 5	
2616 D 5	3412 D 6	7605 E 5	
2625 E 4	3415 C 6	7650 G 2	
2628 D 5	3501 D 4	7652 H 4	



- 1505 B 4
- 1714 E11
- 1714 E 4
- 2701 C12
- 2702 H12
- 2714 E12
- 2715 F12
- 2723 D14
- 2724 D10
- 2725 G14
- 2726 D14
- 3701 E 6
- 3704 H14
- 3705 G13
- 3706 G12
- 3707 C14
- 3708 D13
- 3709 D12
- 3710 D11
- 3711 C11
- 3713 C12
- 3715 H12
- 3721 D15
- 3722 G 6
- 3723 F 6
- 3724 B 6
- 3725 B 7
- 3726 C 6
- 3727 B 5
- 3728 E 7
- 3729 B 5
- 3730 B 5
- 6702 F 7
- 6703 E 6
- 6704 F 5
- 7701 C 7
- 7702 C 5
- 7703 F14
- 9702 A 5

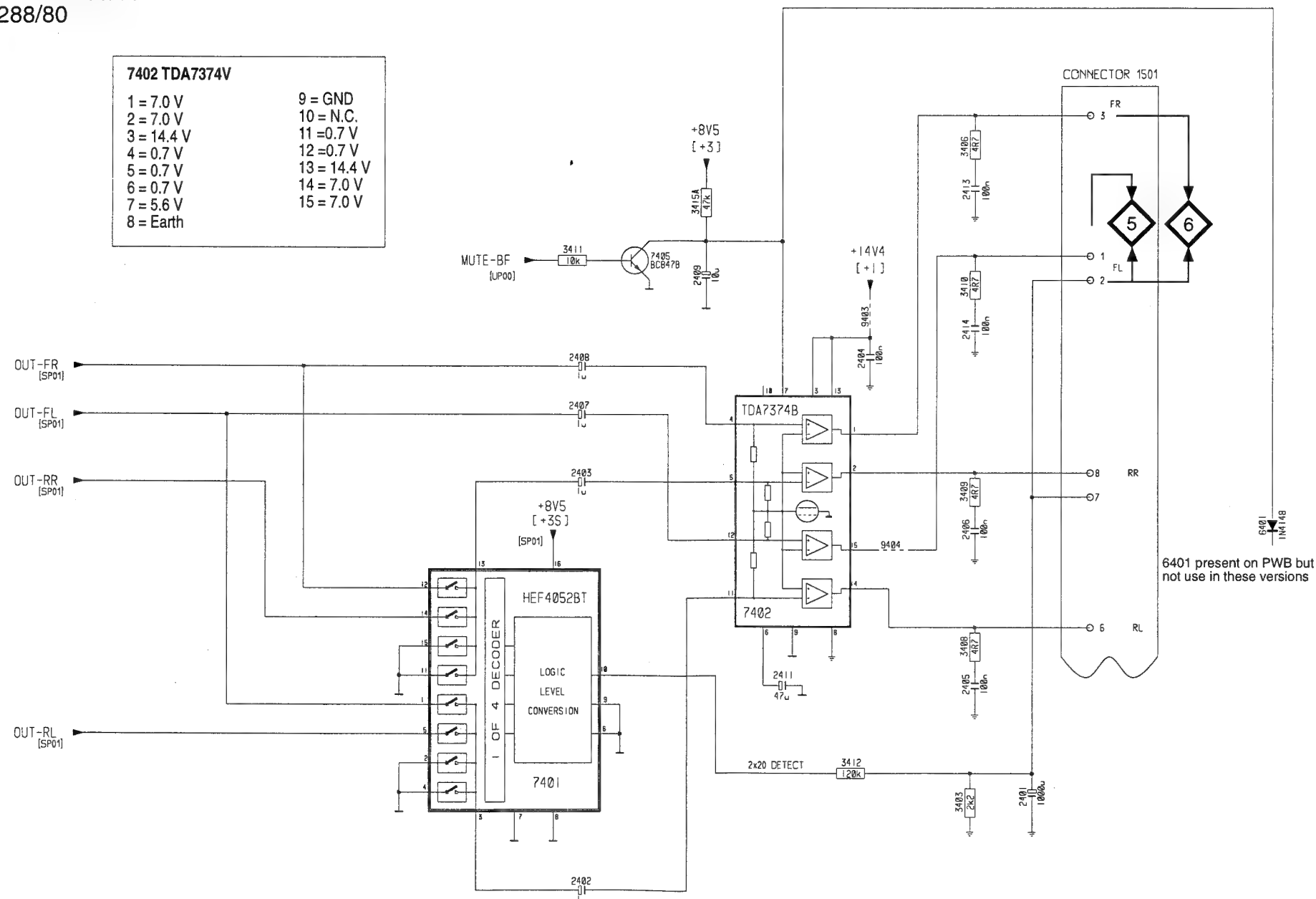
[ PA00 ]

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22RC284/00 22RC288/00  
22RC288/80

1 = 7.0 V	9 = GND
2 = 7.0 V	10 = N.C.
3 = 14.4 V	11 = 0.7 V
4 = 0.7 V	12 = 0.7 V
5 = 0.7 V	13 = 14.4 V
6 = 0.7 V	14 = 7.0 V
7 = 5.6 V	15 = 7.0 V
8 = Earth	

CONNECTOR	4x5W TDA7374		
1501	+	-	CHANNEL
	1	2	5W FL
	3	2	5W FR
	7	6	5W RL
	7	8	5W RR

CONNECTOR	2x15W TDA7374		
1501	+	-	CHANEL
	1	6	15W FL
	3	8	15W FR



6401 present on PWB but  
not use in these versions

1501	C15
2401	J14
2402	K 9
2403	G 9
2404	F12
2405	I13
2406	G13
2407	F 9
2408	F 9
2409	E10
2411	I11
2413	D13
2414	E13
3403	J13
3406	C13
3409	I13
3409	G13
3410	E13
3411	E 9
3412	J12
3415	D10
6401	G16
7401	J 9
7402	H11
7405	E10
9403	E12
9404	H12




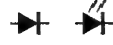




Miscellaneous			⏏		
1001	4822 267 30883	CONNECTOR	2300	4822 126 11692	1UF -20+80% 16V Y5V
1300	4822 242 81503	FILTER SFPS450H-S	2301	5322 122 32654	22NF10%X7R 63V
1301	4822 242 10305	FILTER SKP107M4-AO20-2004	2302	4822 122 33496	100NF10%X7R 63V
1302	4822 242 10305	FILTER SKP107M4-AO20-2004	2305	4822 122 33496	100NF10%X7R 63V
1303	4822 242 10305	FILTER SKP107M4-AO20-2004	2306	4822 122 33496	100NF10%X7R 63V
1501	4822 265 41379	CONNECTOR 10P	2307	4822 126 13196	100NF10% X7R 25V
1502	4822 134 41173	LAMP 50MA 14V T1.25 orange	2308	4822 122 33496	100NF10%X7R 63V
1502	4822 134 41178	LAMP 50MA 14V T1.25 green	2309	5322 122 34098	10NF10%X7R 63V
1503	4822 134 41173	LAMP 50MA 14V T1.25 orange	2310	5322 122 33446	3,3NF10%X7R 63V
1503	4822 134 10028	LAMP 80MA 14V T1.25 green	2311	5322 122 33446	3,3NF10%X7R 63V
1504	4822 134 41175	LAMP 80MA 14V T1.25 orange	2312	4822 122 33514	68PF 5%NP0 50V
1504	4822 134 41179	LAMP 80MA 14V T1.25 green	2313	4822 126 13057	220NF10% X7R 25V
1505	4822 134 41175	LAMP 80MA 14V T1.25 orange	2314	5322 122 31866	6,8NF10%X7R 63V
1505	4822 134 41179	LAMP 80MA 14V T1.25 green	2315	4822 122 33496	100NF10%X7R 63V
1512	4822 276 13483	SWITCH	2316	4822 126 13057	220NF10% X7R 25V
1513	4822 276 13484	SWITCH	2317	5322 122 31866	6,8NF10%X7R 63V
1803	4822 267 50915	CONNECTOR 15p	2318	5322 122 32654	22NF10%X7R 63V
1880	4822 267 60238	CONNECTOR 19p	2319	4822 122 33496	100NF10%X7R 63V
1881	4822 267 60238	CONNECTOR 19p	2320	4822 122 33496	100NF10%X7R 63V
			2321	4822 126 13196	100NF10% X7R 25V
⏏			2322	4822 126 13057	220NF10% X7R 25V
2000	5322 122 31946	27PF 5%NP0 63V	2324	4822 126 13057	220NF10% X7R 25V
2001	5322 122 32658	22PF 5% 50V	2325	5322 122 32654	22NF10%X7R 63V
2016	5322 122 33244	8,2PF 5%NP0 50V	2327	4822 124 23256	47UF 16V
2104	5322 122 34123	1NF10%X7R 50V	2328	5322 124 41431	22UF20% 35V
2121	4822 124 41017	10UF 16V	2330	4822 122 33496	100NF10%X7R 63V
2200	4822 122 33496	100NF10%X7R 63V	2332	4822 124 80837	33UF20% 16V
2201	5322 122 34098	10NF10%X7R 63V	2333	5322 122 34098	10NF10%X7R 63V
2202	4822 122 33496	100NF10%X7R 63V	2340	5322 122 32448	10PF 5% 50V
2203	5322 122 33063	2,2PF 5%NP0 50V	2349	5322 122 34098	10NF10%X7R 63V
2204	5322 126 10343	1,8PF 5%NP0 63V	2401	4822 124 40201	1000UF20% 16V
2205	5322 122 33446	3,3NF10%X7R 63V	2402	4822 124 23282	1UF20% 50V
2206	5322 122 32269	6,8PF 5% 50V	2403	4822 124 23282	1UF20% 50V
2207	4822 126 11692	1UF -20+80% 16v Y5V	2404	4822 126 13196	100NF10% X7R 25V
2208	4822 122 33515	82PF 5%NP0 63V	2405	4822 126 13196	100NF10% X7R 25V
2209	5322 122 32658	22PF 5% 50V	2406	4822 126 13196	100NF10% X7R 25V
2210	4822 122 33496	100NF10%X7R 63V	2407	4822 124 23282	1UF20% 50V
2211	4822 122 33216	270PF 5%NP0 50V	2408	4822 124 23282	1UF20% 50V
2212	5322 122 33446	3,3NF10%X7R 63V	2409	4822 124 40248	10UF20% 63V
2213	4822 122 33496	100NF10%X7R 63V	2411	4822 124 23256	47UF 16V
2214	5322 122 32654	22NF10%X7R 63V	2413	4822 126 13196	100NF10% X7R 25V
2215	4822 122 33496	100NF10%X7R 63V	2414	4822 126 13196	100NF10% X7R 25V
2217	4822 124 23279	22UF20% 16V	2501	4822 124 40248	10UF20% 63V
2218	4822 126 11692	1UF -20+80% 16V Y5V	2502	4822 124 23256	47UF 16V
2219	4822 124 80837	33UF20% 16V	2503	5322 124 41431	22UF20% 35V
2220	4822 124 23281	33UF20% 16V	2504	5322 124 41431	22UF20% 35V
2221	5322 122 32452	47PF 5%NP0 63V	2505	4822 124 23256	47UF 16V
2223	5322 122 33538	150PF 2%NP0 63V	2506	4822 124 40248	10UF20% 63V
2224	5322 122 34098	10NF10%X7R 63V	2507	4822 124 11507	2200UF 20% 16V
2225	5322 122 32269	6,8PF 5% 50V	2508	5322 124 41431	22UF20% 35V
2227	4822 126 10326	180PF 5%NP0 63V	2509	4822 124 40248	10UF20% 63V
2228	5322 122 32287	4,7PF 5%NP0 50V	2510	4822 124 23279	22UF20% 16V
2229	5322 122 32448	10PF 5% 50V	2511	4822 126 13196	100NF10% X7R 25V
2230	4822 126 11692	1UF -20+80% 16V Y5V	2514	5322 122 32531	100PF 5%NP0 50V
2231	5322 122 32448	10PF 5% 50V	2515	5322 122 32531	100PF 5%NP0 50V
2232	5322 122 32448	10PF 5% 50V	2602	4822 124 80453	100UF20% 10V
2249	4822 124 41584	100UF 20% 10V	2603	4822 124 80453	100UF20% 10V
2270	5322 122 34123	1NF10%X7R 50V	2612	4822 122 33342	33NF10%X7R 63V
2271	5322 122 34123	1NF10%X7R 50V	2613	4822 122 32646	5,6NF10%X7R 50V
2272	5322 122 32269	1NF10%X7R 50V	2614	4822 122 32646	5,6NF10%X7R 50V
2273	4822 126 11692	1UF -20+80% 16V Y5V			

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⏏			⏏		
2615	4822 122 33342	33NF10%X7R 63V	3308	4822 051 20224	220K00 5% 0,1W
2616	5322 122 34098	10NF10%X7R 63V	3309	4822 051 20124	120K00 5% 0,1W
2625	4822 126 11692	1UF -20+80% 16V Y5V	3310	4822 051 20684	680K00 5% 0,1W
2628	4822 126 11692	1UF -20+80% 16V Y5V	3311	4822 051 20475	4M70 5% 0,1W
2650	4822 124 23504	2.2UF20% 50V	3313	4822 051 20124	120K00 5% 0,1W
2651	4822 124 23504	2.2UF20% 50V	3314	4822 051 20564	560K00 5% 0,1W
2652	4822 126 13343	47NF10% X7R 25V	3315	4822 051 20564	560K00 5% 0,1W
2653	5322 122 32654	22NF10%X7R 63V	3316	4822 051 20105	1M00 5% 0,1W
2654	4822 126 13196	100NF10% X7R 25V	3317	4822 051 20273	27K00 5% 0,1W
2655	4822 122 33515	82PF 5%NP0 63V	3318	4822 051 20391	390R00 5% 0,1W
2656	5322 122 32452	47PF 5%NP0 63V	3319	4822 100 11163	100K 30%LIN 0,1W
2657	4822 122 33216	270PF 5%NP0 50V	3321	4822 100 11163	100K 30%LIN 0,1W
2658	5322 116 80853	560PF 5%NP0 63V	3322	4822 100 11163	100K 30%LIN 0,1W
2659	4822 126 13196	100NF10% X7R 25V	3323	4822 051 20391	390R00 5% 0,1W
2660	4822 126 13196	100NF10% X7R 25V	3324	4822 051 20272	2K70 5% 0,1W
2661	4822 126 13196	100NF10% X7R 25V	3325	4822 051 20101	100R00 5% 0,1W
2664	4822 126 13196	100NF10% X7R 25V	3326	4822 051 20102	1K00 5% 0,1W
2665	5322 122 34123	1NF10%X7R 50V	3327	4822 051 20681	680R00 5% 0,1W
2666	5322 122 34123	1NF10%X7R 50V	3330	4822 051 20473	47K00 5% 0,1W
2667	4822 126 13196	100NF10% X7R 25V	3341	4822 051 20109	10R00 5% 0,1W
2701	4822 124 80453	100UF20% 10V	3346	4822 051 20473	47K00 5% 0,1W
2702	4822 124 80453	100UF20% 10V	3347	4822 051 20008	0R00 JUMP. (0805)
2714	5322 122 34123	1NF10%X7R 50V	3348	4822 051 20681	680R00 5% 0,1W
2715	5322 122 34123	1NF10%X7R 50V	3349	4822 051 20223	22K00 5% 0,1W
2723	4822 124 80453	100UF20% 10V	3403	4822 051 20222	2K20 5% 0,1W
2724	4822 124 80453	100UF20% 10V	3406	4822 051 20478	4R70 5% 0,1W
2725	5322 122 34098	10NF10%X7R 63V	3408	4822 051 20478	4R70 5% 0,1W
2726	5322 122 34098	10NF10%X7R 63V	3409	4822 051 20478	4R70 5% 0,1W
2801	4822 126 13196	100NF10% X7R 25V	3410	4822 051 20478	4R70 5% 0,1W
2802	4822 126 13196	100NF10% X7R 25V	3411	4822 051 20103	10K00 5% 0,1W
2805	4822 126 13196	100NF10% X7R 25V	3412	4822 051 20124	120K00 5% 0,1W
2807	4822 126 13196	100NF10% X7R 25V	3415	4822 051 20473	47K00 5% 0,1W
2808	4822 126 13196	100NF10% X7R 25V	3501	4822 051 20473	47K00 5% 0,1W
			3502	4822 051 20103	10K00 5% 0,1W
			3503	4822 051 20222	2K20 5% 0,1W
⏏			3504	4822 051 20681	680R00 5% 0,1W
3110	4822 051 20229	22R00 5% 0,1W	3505	4822 051 20273	27K00 5% 0,1W
3112	4822 051 20008	0R00 JUMP. (0805)	3506	4822 051 20103	10K00 5% 0,1W
3113	4822 051 20008	0R00 JUMP. (0805)	3507	4822 051 20473	47K00 5% 0,1W
3200	4822 051 20392	3K90 5% 0,1W	3508	4822 051 20184	180K00 5% 0,1W
3201	4822 051 20222	2K20 5% 0,1W	3510	4822 051 20473	47K00 5% 0,1W
3202	4822 051 20103	10K00 5% 0,1W	3511	4822 051 20103	10K00 5% 0,1W
3203	4822 051 20221	220R00 5% 0,1W	3512	4822 051 20223	22K00 5% 0,1W
3204	4822 051 20471	470R00 5% 0,1W	3513	4822 117 11383	12K 1% 0,1W
3205	4822 051 20471	470R00 5% 0,1W	3514	4822 051 20222	2K20 5% 0,1W
3206	4822 051 20101	100R00 5% 0,1W	3515	4822 051 20222	2K20 5% 0,1W
3208	4822 051 20103	10K00 5% 0,1W	3518	4822 051 20334	330K00 5% 0,1W
3209	4822 051 20103	10K00 5% 0,1W	3519	4822 051 20473	47K00 5% 0,1W
3210	4822 051 20225	2M20 5% 0,1W	3520	4822 051 20229	22R00 5% 0,1W (../00)
3211	4822 051 20479	47R00 5% 0,1W	3520	4822 051 20828	8R2 5% 0,1W (../80)
3212	4822 051 20229	22R00 5% 0,1W	3521	4822 116 83863	1K 5% 0,5W
3213	4822 051 20008	0R00 JUMP. (0805)	3522	4822 116 83863	1K 5% 0,5W
3290	4822 051 20224	220K00 5% 0,1W	3523	4822 116 52195	47E 5% 0,5W
3292	4822 051 20229	22R00 5% 0,1W	3524	4822 051 20229	22R00 5% 0,1W (../00)
3300	4822 117 11383	12K 1% 0,1W	3524	4822 051 20828	8R2 5% 0,1W (../80)
3301	4822 051 20335	3M30 5% 0,1W	3601	4822 051 20473	47K00 5% 0,1W
3302	4822 051 20333	33K00 5% 0,1W	3602	4822 051 20223	22K00 5% 0,1W
3303	4822 051 20333	33K00 5% 0,1W	3603	4822 051 20473	47K00 5% 0,1W
3306	4822 051 20333	33K00 5% 0,1W	3604	4822 051 20223	22K00 5% 0,1W
3307	4822 051 20432	4K30 5% 0,1W	3606	4822 051 20223	22K00 5% 0,1W

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3608	4822 051 20334	330K00 5% 0,1W	6200	5322 130 34337	BAV99
3609	4822 051 20334	330K00 5% 0,1W	6201	4822 130 83849	1SV128
3614	4822 051 20223	22K00 5% 0,1W	6202	4822 130 83849	1SV128
3630	4822 051 20223	22K00 5% 0,1W	6401	4822 130 30621	1N4148
3650	4822 051 20334	330K00 5% 0,1W	6502	5322 130 30684	1N4002GPE
3651	4822 051 20222	2K20 5% 0,1W	6503	4822 130 30621	1N4148
3652	4822 051 20103	10K00 5% 0,1W	6505	4822 130 34173	BZX55-F5V6
3701	4822 051 20103	10K00 5% 0,1W	6506	4822 130 30862	BZX79-C9V1
3704	4822 051 20334	330K00 5% 0,1W	6507	4822 130 30621	1N4148
3705	4822 117 11383	12K 1% 0,1W	6509	4822 130 30621	1N4148
3706	4822 117 11383	12K 1% 0,1W	6702	4822 130 34174	BZX79-C4V7
3707	4822 051 20334	330K00 5% 0,1W	6703	4822 130 34174	BZX79-C4V7
3708	4822 117 11383	12K 1% 0,1W	6704	4822 130 30621	1N4148
3709	4822 117 11383	12K 1% 0,1W			
3710	4822 051 20103	10K00 5% 0,1W			
3711	4822 051 20103	10K00 5% 0,1W	7200	4822 130 83614	BB135
3713	4822 051 20479	47R00 5% 0,1W	7201	4822 130 63534	PMBFJ309
3715	4822 051 20479	47R00 5% 0,1W	7202	4822 209 33168	TEA6811V/C2/R1
3721	4822 051 20391	390R00 5% 0,1W	7300	4822 209 33167	TEA6821T/V2
3722	4822 051 20103	10K00 5% 0,1W	7301	4822 130 60887	BF840
3723	4822 051 20103	10K00 5% 0,1W	7401	5322 209 11102	HEF4052BT
3724	4822 051 20272	2K70 5% 0,1W	7402	4822 209 90404	TDA7374B
3725	4822 051 20103	10K00 5% 0,1W	7405	4822 130 60511	BC847B
3726	4822 051 20272	2K70 5% 0,1W	7501	4822 130 63539	BC847B
3727	4822 051 20478	4R70 5% 0,1W	7502	4822 130 63539	BC847B
3728	4822 051 20473	47K00 5% 0,1W	7503	4822 130 40941	BC558
3729	4822 051 20471	470R00 5% 0,1W	7504	4822 130 60511	BC847B
3730	4822 051 20478	4R70 5% 0,1W	7505	4822 130 60511	BC847B
3804	4822 051 20103	10K00 5% 0,1W	7506	4822 130 60511	BC847B
3805	4822 051 20222	2K20 5% 0,1W	7507	4822 209 90017	L4949N
3806	4822 051 20184	180K00 5% 0,1W	7601	4822 130 60511	BC847B
3807	4822 051 20103	10K00 5% 0,1W	7602	5322 209 11102	HEF4052BT
3808	4822 051 20103	10K00 5% 0,1W	7604	4822 130 60511	BC847B
3809	4822 051 20008	0R00 JUMP. (0805)	7605	4822 209 31979	TEA6330T/V1
3810	4822 051 20101	100R00 5% 0,1W	7650	4822 209 31981	SAA6579T/V1
3811	4822 051 20473	47K00 5% 0,1W	7651	4822 209 83159	LA2000
			7652	4822 209 32436	P83CE654FFB/506
			7653	5322 209 60424	74HC573D
4300	4822 242 81698	AF9192C-A (61,5MHZ)	7654	4822 209 31553	HY6264ALJ-10
5001	4822 156 21723	IND FXD LAL02	7701	4822 130 60511	BC847B
5200	4822 157 63315	IND FXD LAL02 A 220U 10%	7702	4822 130 44283	BC636
5201	4822 157 71059	IND VAR 7MM MC122 100MHZ	7703	4822 209 33162	MC4558IDT
5202	4822 152 20679	IND FXD LAL02 A 68U 10%	7802	5322 209 11129	PCF8576T
5203	4822 157 53473	IND FXD LAL04 A 1000U 10%	7803	4822 900 10322	ST24C08CB6/PROG
5206	4822 157 71057	IND VAR 7MM 7CDA 47000U 6%	7804	4822 209 33987	P83CE528EFB/006
5207	4822 157 71058	FIL LC VAR 98M KZV-353			
5208	4822 156 21722	IND VAR 7MM 7CGL 10.7MHZ			
5209	4822 157 71055	IND VAR 5MM 5KM 72.2MHZ			
5210	4822 157 71055	IND VAR 5MM 5KM 72.2MHZ			
5211	4822 156 21721	IND FXD LAL02 A 2,2U 10%			
5212	4822 156 21719	IND FXD LAL02 A 1,5U 10%			
5301	4822 157 71742	IND VAR 7MM 7CGL 450KHZ			
5302	4822 157 71061	IND VAR 7MM 7P 10.7MHZ			
5503	4822 157 70839	COIL ASSY 160U			
5650	4822 242 80259	LN-G38-311 (4,332MHZ)			
5651	4822 157 53473	IND FXD LAL04 A 1000U 10%			
5652	4822 242 81959	FILTER CST11.5MTW			
5801	4822 157 53473	IND FXD LAL04 A 1000U 10%			
5802	4822 242 81959	FILTER CST11.5MTW			

Technician's remarks



Service  
Service  
**Service**



PHIL-05032

**ERSATZTEILE**  
für Philips Car Systems  
erhalten Sie bei:

**KiVi**

**KiVi Service GmbH**  
Windmühlenstr. 41 · 31178 Giesen/Emmerke  
Tel.: 0 51 21 / 6 00 20 · Fax 0 51 21 / 6 00 2 54

Supplement

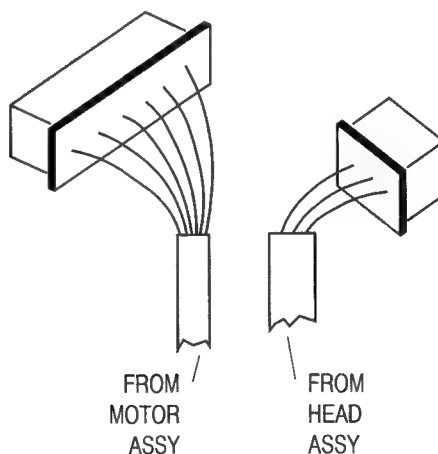
# Service Manual

12 V  $\oplus$ 

For this version, please refer to the Service Manual  
CDS-36MH3 4822 725 24114, with the following exceptions:

- Different interface connectors:  
Item 90 (see exploded view on next page): only for CDS-36PR  
(no service item);  
CDS-36PS has separate motor/switch and head signal connectors  
(no service items) - see figure below:

+4704

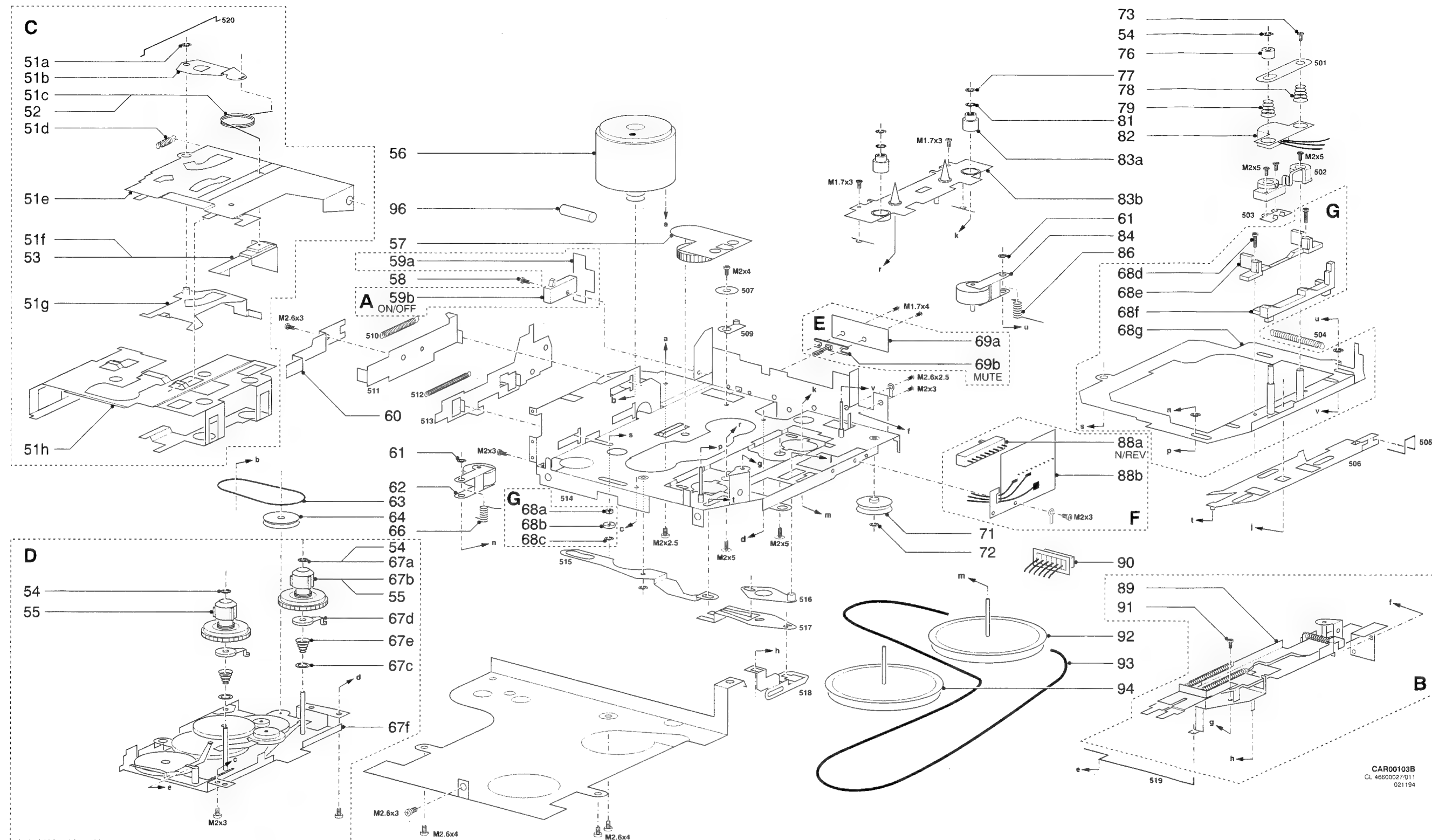


- Version CDS-36PR: bottom plate added.



# PHILIPS



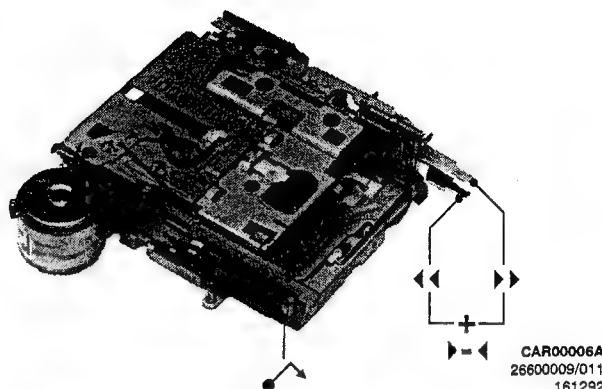


**Note:** ONLY those position numbers mentioned here are service spare parts.

4822 691 10421	Deck CDS-36PS complete	59	4822 277 21603	Switch, ON/OFF	2)	73	4822 502 13969	Screw M2X4	91	4822 502 13968	Screw M2X4	G	4822 466 83156	Head plate assy	1)
4822 701 13942	Deck CDS-36PR complete	61	4822 532 11631	Ret. ring 1.5		76	4822 532 21456	Bushing for head	92	4822 528 60422	Flywheel, NOR		4822 395 30054	811/CTM	
4822 492 63888	Torsion spring	1)	62	4822 528 81503	Pressure roller, REV	77	4822 530 70447	Ret. ring 1.6X3.2	93	4822 358 31181	Belt, large		4822 397 30069	SBC419	
4822 492 42712	Torsion spring	2)	63	4822 358 31263	Belt, small	78	4822 492 52301	Spring for head, right	94	4822 528 60423	Flywheel, REV		4822 397 30071	SBC420	
4822 403 53313	Cassette guide		64	4822 522 33229	Pulley gear	79	4822 492 52302	Spring for head, left	A	4822 214 52245	Switch1 pcb assy	1)	4822 389 20035	Drop in cassette	
54	4822 532 51953	Washer 1.6X0.25	66	4822 492 42599	Torsion spring, REV	81	4822 532 51955	Washer 2.1X3.5	B	4822 404 21324	Lever bracket assy	1)	1)	only CDS-36PR	
55	4822 528 10903	Reel spindle assy	69B	4822 276 13519	Switch, MUTE	82	4822 249 30211	Head, playback	C	4822 256 92264	Cassette holder assy	1)	2)	only CDS-36PS	
56	4822 361 30426	Motor assy	71	4822 528 81468	Pulley, for large belt	1)	84	4822 528 81504	D	4822 528 10908	Reel base assy	1)			
57	4822 522 33228	Idler arm with gears	71	4822 528 81527	Idle pulley	2)	86	4822 492 42598	E	4822 276 13571	Mute switch assy	1)			
58	4822 502 13967	Screw M1.7X6	72	4822 532 51952	Washer 1.2X0.25		88A	4822 277 21743	F	4822 214 52246	Switch2 pcb assy	1)			

## Car cassette deck CDS-36MH3

Service  
Service  
Service



# Service Manual

12 V

## (GB) TECHNICAL DATA

Operating voltage	: 10.5-16VDC (nom. 13.2VDC)
Tape speed	: 4.76cm/sec $\pm$ 2%
Wow & flutter	: $\leq$ 0.35% RMS
Crosstalk suppression	: > 35dB
Fast wind time	: < 170 secs (C-60)
Number of tracks	: 2x2

## (F) CARACTERISTIQUES TECHNIQUES

Tension de fonctionnement	: 10.5-16VDC (nom. 13.2VDC)
Vitesse de bande	: 4.76cm/sec $\pm$ 2%
Pleurage & scintillement	: $\leq$ 0.35% RMS
Assourdissement de diaphonie	: > 35dB
Temps de bobinagerapide	: < 170 sec (C-60)
Nombre de pistes	: 2x2

## (NL) TECHNISCHE GEGEVENS

Werkspanning	: 10.5-16VDC (nom. 13.2VDC)
Bandsnelheid	: 4.76cm/sec $\pm$ 2%
Wow & flutter	: $\leq$ 0.35% RMS
Overspraak demping	: > 35dB
Omspoeltijd	: < 170 sec (C-60)
Aantal sporen	: 2x2

## (D) TECHNISCHE DATEN

Betriebsspannung	: 10.5-16VDC (nom. 13.2VDC)
Bandgeschwindigkeit	: 4.76cm/s $\pm$ 2%
Gleichlaufschwankungen	: $\leq$ 0.35% RMS
Uebersprach-Dämpfung	: > 35dB
Umspuldauer	: < 170 s (C-60)
Spurenzahl	: 2x2

## (I) DATI TECNICI

Tensione di lavoro	: 10.5-16VDC (nom. 13.2VDC)
Velocità di trascinamento	: 4.76cm/sec $\pm$ 2%
Wow & flutter	: $\leq$ 0.35% RMS
Assordamento della diafonia	: > 35dB
Durata di avvolgimento	: < 170 sec (C-60)
Numero di piste	: 2x2



# PHILIPS

## **(GB) MAINTENANCE**

The cassette mechanism requires periodic cleaning, as well as periodic lubrication of the principal points.

### **1. Cleaning with alcohol or spirit**

- Playback head
- Capstan & pressure roller
- Belts & pulleys

To clean head, pressure roller and capstan, it is also possible to use drop-in cassette SBC114-4822 389 20035.

### **2. Lubrication**

- See exploded view.

## **(NL) ONDERHOUD**

Het cassette mechanisme moet periodiek schoongemaakt en op de belangrijkste punten gesmeerd worden.

### **1. Schoonmaken met alcohol of spiritus**

- Weergeefkop
- Toonas & drukrol
- Snaren & poelies

Voor het reinigen van kop, drukrol en toonas kan ook "drop-in"-cassette SBC114-4822 389 20035 worden gebruikt.

### **2. Smering**

- Zie exploded view.

## **(F) MAINTENANCE**

Le mécanisme de cassette doit être nettoyé régulièrement et graissé à ses points cardinaux.

### **1. Nettoyage à l'alcool ou à l'alcool éthylique**

- Tête de reproduction
- Cabestan & galet-presseur
- Courroies & poulies

Pour ce qui est du nettoyage de la tête, du galet-presseur et du cabestan on pourra également utiliser la cassette "drop-in" SBC114-4822 389 20035.

### **2. Lubrification**

- Voir vue éclatée.

## **(D) WARTUNG**

Der Cassettenteil soll in regelmässigen Zeitabständen gereinigt und an den wichtigsten Stellen geschmiert werden.

### **1. Reinigen mit Alkohol oder Spiritus**

- Wiedergabekopf
- Tonwelle & Andruckrolle
- Pesen & Seilrollen

Zum Reinigen von Kopf, Andruckrolle und Tonwelle kann auch die "drop-in"-Cassette SBC114-4822 389 20035 benutzt werden.

### **2. Schmierung**

- Siehe Explosionsansicht.

## **(I) MANUTENZIONE**

La meccanica del registratore richiede pulizie periodiche, come pure periodiche lubrificazioni dei punti principali.

### **1. Pulizia con alcool o spirito**

- Testina di riproduzione
- Capstan & rullo pressore
- Cinghie & puleggie

Per la pulizia della testina, del rullo pressore e del capstan si può usare la cassetta "drop-in" SBC114-4822 389 20035.

### **2. Lubrificazione**

- Vedere esploso.

## **(GB) ADJUSTMENTS AND CHECKS**

Equipment required:

- Universal test cassette SBC419 4822 397 30069
- Universal test cassette SBC420 4822 397 30071
- Friction test cassette 811/CTM 4822 395 30054
- Spring scale 50-500g 4822 395 80028
- Wow & flutter meter
- AC millivoltmeters

### **1. Azimuth (Fig. 1)**

Azimuth alignment should be carried out on a complete car radio; proceed as follows:

- Connect the millivoltmeters to the loudspeaker outputs.
- Insert test cassette SBC419 (or SBC420), select NOR (normal play) and play the 10kHz signal.
- Adjust Azimuth screw "A" for equal and maximum output voltage reading for both RH and LH channel.
- Switch to REV (reverse play) and play the 10kHz signal.
- Repeat the adjustment with screw "B"

### **2. Friction clutch 55**

- Insert friction test cassette 811/CTM (NOR and REV).
- Play take-up torque should be 35 - 75g/cm.
- Fast wind torque should be 40 - 150g/cm.
- If the torque is not correct, replace clutch 55.

### **3. Wow & flutter/tape speed (Fig. 1)**

This check is carried out on a complete car radio; proceed as follows:

- Connect the wow & flutter meter to the LS outputs
- Insert test cassette SBC419 (or SBC420) and play the 3150Hz signal
- The wow & flutter value should be 0.35%
- Tape speed should be 4.76cm/sec. 2%
- The tape speed can be adjusted with screw "C"
- In case of an excessive wow & flutter value, check following parts for correct functioning:
  - motor 56
  - pressuer rollers 62, 84
  - belts 63, 93
  - friction clutches 55
  - flywheels 92, 94
  - pulley 71

## **(NL) INSTELLINGEN EN CONTROLES**

Benodigde meetinstrumenten:

- |                                  |                |
|----------------------------------|----------------|
| - Universele testcassette SBC419 | 4822 397 30069 |
| - Universele testcassette SBC420 | 4822 397 30071 |
| - Frictie testcassette 811/CTM   | 4822 395 30054 |
| - Veerdrukmeter 50-500g          | 4822 395 80028 |
| - Wow & flutter meter            |                |
| - AC millivoltmeters             |                |

### **1. Azimuth (fig. 1)**

De Azimuth instelling dient te geschieden bij de komplette autoradio en wel als volgt:

- Sluit de millivoltmeters aan op de LS-uitgangen.
- Breng testcassette SBC419 (of SBC420) in, kies NOR (normaal afspelen) en geef het 10kHz-signaal weer.
- Stel met schroef "A" de uitgangsspanning zo in, dat deze voor zowel linker- als rechterkanaal gelijk en maximaal is.
- Schakel over naar REV (omgekeerd afspelen) en geef het 10kHz-signaal weer.
- Herhaal de instelling met schroef "B".

### **2. Frictie 55**

- Breng testcassette 811/CTM in (NOR en REV).
- De afspeelfrictie moet 35 - 75g/cm zijn.
- De snelspoelfrictie moet 40 - 150g/cm zijn.
- Indien de waarde niet juist is moet frictie 55 worden vervangen.

### **3. Wow & flutter/bandsnelheid (fig. 1)**

Kontrolle moet worden gedaan bij een complete autoradio en wel als volgt:

- Sluit wow & flutter meter aan op de LS-uitgangen.
  - Breng testcassette SBC419 (of SBC420) in en geef het 3150Hz-signaal weer.
  - De jengel moet 0,35% zijn.
  - De bandsnelheid moet 4,76cm/sec 2% zijn.
  - De snelheid is instelbaar met schroef "C".
- Bij een buitensporige waarde moeten de volgende onderdelen op hun juiste werking worden gecontroleerd:
- Motor 56
  - Drukrollen 62, 84
  - Snaren 63, 93
  - Fricties 55
  - Vliegwielen 92, 94
  - Poelie 71

## **(F) REGLAGES ET CONTROLES**

Instruments requis

- |  |                |
|--|----------------|
| - Cassette d'essai universelle SBC419    | 4822 397 30069 |
| - Cassette d'essai universelle SBC420    | 4822 397 30071 |
| - Cassette d'essai de friction 811/CTM   | 4822 395 30054 |
| - Dynamomètre 50-500g                    | 4822 395 80028 |
| - Instrument du pleurage & scintillement |                |
| - Millivoltmètre en alternatif           |                |

### **1. L'azimuth (fig. 1)**

Le réglage de l'azimuth devra être effectué lorsque l'auto-radio est au complet; procéder comme suit:

- Brancher les millivoltmètres sur les sorties h-p.
- Insérer la cassette d'essai SBC419 (ou SBC420), sélectionner NOR (défilement normal) et reproduire le signal de 10kHz.
- Régler la tension de sortie à l'aide de la vis "A" de façon qu'elle soit égale et au max. pour le canal de gauche tout comme celui de droite.
- Sélectionner REV (défilement inversé) et reproduire le signal de 10kHz.
- Répéter le réglage à l'aide de la vis "B".

### **2. Friction 55**

- Introduire la cassette d'essai 811/CTM (NOR et REV).
- La friction de défilement doit être 35 - 75g/cm.
- La friction au bobinage rapide doit être 40 - 150g/cm.
- Si la valeur est inexacte, remplacer la friction 55.

### **3. Pleurage et scintillement/vitesse de bande (fig. 1)**

Le contrôle devra être effectué lorsque l'auto-radio est au complet; procéder comme suit:

- Brancher l'instrument du pleurage sur les sorties h-p.
- Introduire la cassette d'essai SBC419 (ou SBC420) et reproduire le signal de 3150Hz.
- La valeur de pleurage doit être 0,35%.
- La vitesse de bande doit être 4,76cm/sec 2%.
- La vitesse est réglable avec vis "C".

Si le taux de pleurage est dépassé, il faut vérifier le fonctionnement des composants suivants:

- moteur 56
- galets presseur 62, 84
- courroies 63, 93
- couple de friction 55
- volants 92, 94
- poulie 71

## D EINSTELLUNGEN UND KONTROLLEN

### Benötigte Messgeräte:

- Universal-Testcassette SBC419	4822 397 30069
- Universal-Testcassette SBC420	4822 397 30071
- Friktionstestcassette 811/CTM	4822 395 30054
- Federwaage 50-500p	4822 395 80028
- Gleichlaufanalysator	
- Wechselspannungs-Millivoltmeter	

### 1. Azimuth (Bild 1)

Die Azimutheinstellung soll mit dem kompletten Autoradio stattfinden und zwar wie folgt:

- Millivoltmeter an die Lautsprecheranschlüsse anschließen.
- Testcassette SBC419 (oder SBC420) einlegen, NOR (normal spielen) wählen und das 10kHz-Signal wiedergeben.
- Mit Schraube "A" die Ausgangsspannung so einstellen, dass sie für sowohl den linken als auch den rechten Kanal gleich ist und den Höchstwert aufweist.
- Auf REV (umgekehrt spielen) schalten und das 10kHz-Signal wiedergeben.
- Die Einstellung mit Schraube "B" wiederholen.

### 2. Reibkupplung 55

- Friktionstestcassette 811/CTM einlegen (NOR und REV).
- Die VL-Friktion soll 35 - 75p/cm sein.
- Die SVL-Friktion soll 40 - 150p/cm sein.
- Falls der Wert nicht richtig ist, muss Friktion 55 ersetzt werden.

### 3. Gleichlaufschwankungen/Bandgeschwindigkeit (Bild 1)

Die Kontrolle soll mit dem kompletten Autoradio wie folgt vorgenommen werden:

- Gleichlaufanalysator an die LS-Anschlüsse anschließen.
  - Testcassette SBC419 (oder SBC420) einlegen und das 3150Hz-Signal wiedergeben.
  - Der Jaulwert soll 0,35% sein.
  - Die Bandgeschwindigkeit soll 4,76cm/s 2% sein.
  - Die Geschwindigkeit ist einstellbar mit Schraube "C".
- Bei einem übermäßigen Jaulwert folgende Teile auf ihr richtiges Funktionieren kontrollieren:
- Motor 56
  - Andruckrollen 62, 84
  - Pesen 63, 93
  - Friktion 55
  - Schwungräder 92, 94
  - Seilrad 71

## I REGOLAZIONI E CONTROLLI

### Strumenti richiesti:

- Cassette test universale SBC419	4822 397 30069
- Cassette test universale SBC420	4822 397 30071
- Cassette test per la frizione 811/CTM	4822 395 30054
- Dinamometro 50-500gr	4822 395 80028
- Strumento wow & flutter	
- Millivoltmetro AC	

### 1. Azimuth (fig. 1)

La regolazione dell'azimuth deve essere eseguita quando l'autoradio è completa e ciò nel seguente modo:

- Collegare un mV-metro all'uscita per altoparlante.
- Inserire cassette test SBC419 (o SBC420), selezionare NOR ("normal play") e riprodurre il segnale a 10kHz.
- Ruotare la vite "A" finché la tensione letta per entrambi i canali sia la più elevata.
- Selezionare REV ("reverse play") e riprodurre il segnale a 10kHz.
- Selezionare la funzione Reverse e ripetere la taratura dell'azimuth utilizzando la vite "B".

### 2. Forza della frizione 55

- Inserire la cassette 811/CTM (NOR e REV).
- La forza in Play deve essere 35 - 75gr/cm, in avvolgimento veloce 40 - 150gr/cm.
- Se la forza non è corretta sostituire la frizione 55.

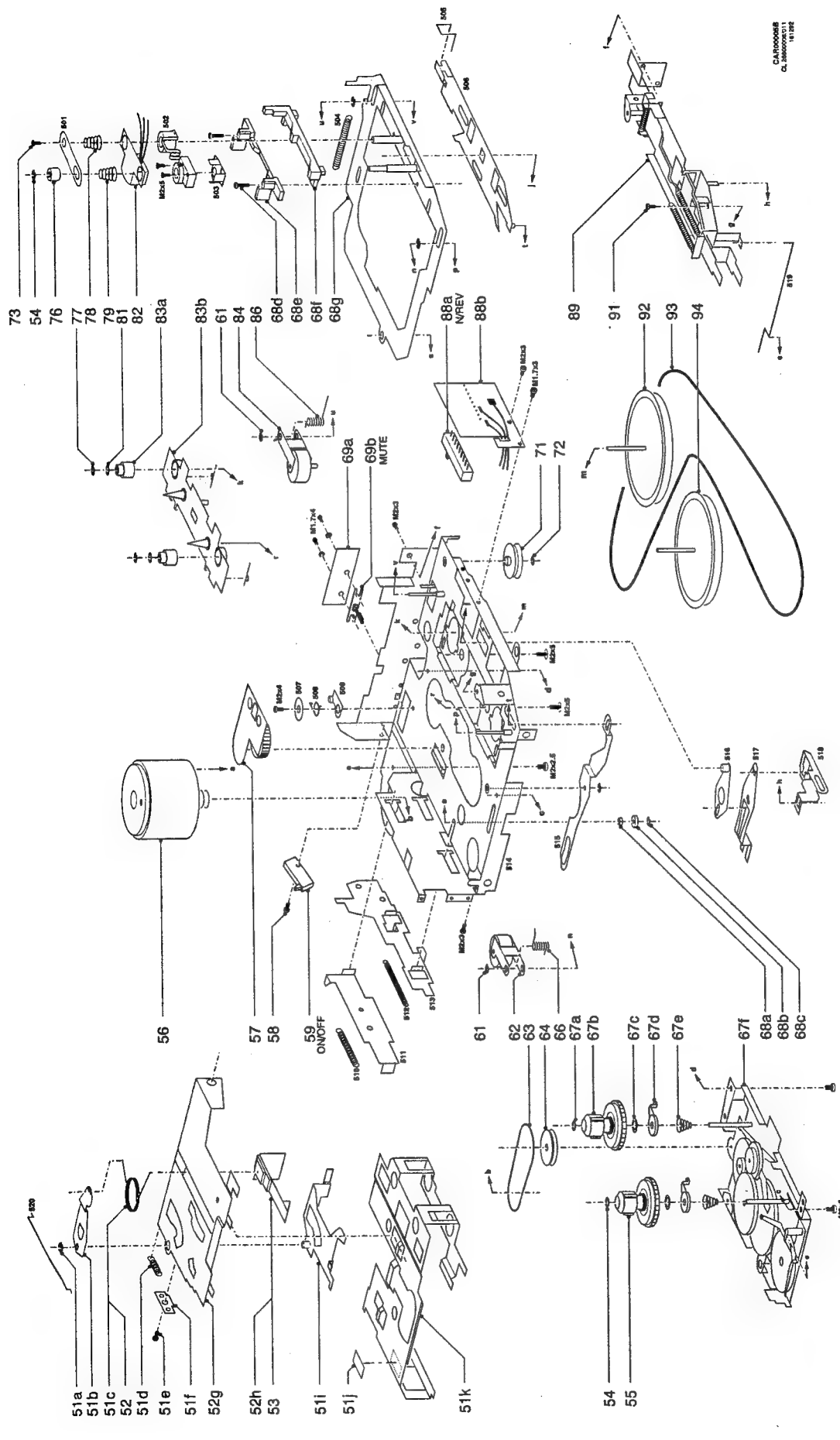
### 3. Wow e flutter/velocità del nastro (fig. 1)

Questo controllo deve essere eseguito quando l'autoradio

è completa e ciò in maniera seguente:

- Collegare il misatore di Wow e flutter all'uscita per altoparlante.
  - Inserire la cassette test SBC419 (o SBC420) e riprodurre il segnale a 3150Hz.
  - Il valore di Wow e flutter deve essere 0,35%.
  - La velocità deve essere 4,76cm/sec 2%.
  - La velocità può essere regolata con la vite "C".
- Nel caso ci sia un valore eccessivo di Wow e flutter, bisogna controllare le seguenti parti se funzionano in modo corretto:
- Motore 56
  - Rullo pressore 62, 84
  - Cinghia di trascinamento 63, 93
  - Frizione 55
  - Volano 92, 94
  - Puleggia 71





51	4822 256 91894	Cassette holder (compl.)	89	4822 404 21254	Lever unit, FW/FRW
52	4822 492 42601	Torsion spring	91	4822 502 13968	Screw M2x4
53	4822 403 53313	Cassette guide	92	4822 528 60395	Flywheel, NOR
54	4822 532 51953	Washer 1.6x0.25	93	4822 358 31181	Belt, large
55	4822 528 10845	Carrier (compl.)	94	4822 528 60406	Flywheel, REV
56	4822 361 30393	Motor		4822 701 12727	Deck complete CDS-36MH3
57	4822 522 33228	Idle arm (compl.)			
58	4822 522 33228	On/off switch			
59	4822 277 21603	Ret. ring 1.5			
61	4822 532 11631				
62	4822 528 81469	Pressure roller, REV			
63	4822 358 31182	Belt, small			
64	4822 522 33229	Pulley gear			
66	4822 492 42589	Torsion spring, REV			
67	4822 528 10862	Gear unit			
68	4822 459 80764	Head support			
69	4822 278 90722	Mute switch (with pcb)			
70	4822 528 81468	Pulley			
71	4822 532 51952	Washer 1.2x0.25			
72	4822 277 21603	Screw fix head R, M2x4			
73	4822 502 13969				
76	4822 532 21456	Bushing for head			
77	4822 530 70447	Ret. ring 1.6x3.2			
78	4822 492 52301	Spring for head, R			
79	4822 492 52302	Spring for head, L			
81	4822 532 51955	Washer 2.1x3.5			
82	4822 249 30183	Playback head			
83	4822 466 82996	Bearing plate			
84	4822 528 81471	Pressure roller, NOR			
86	4822 492 42598	Torsion spring, NOR			
88	4822 277 21655	NOR/REV switch (with pcb)			



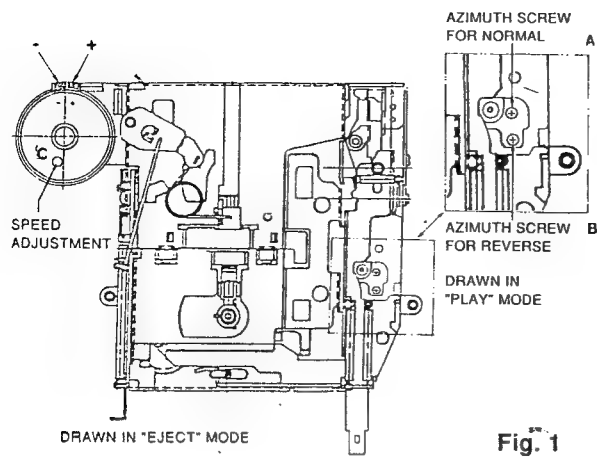


Fig. 1

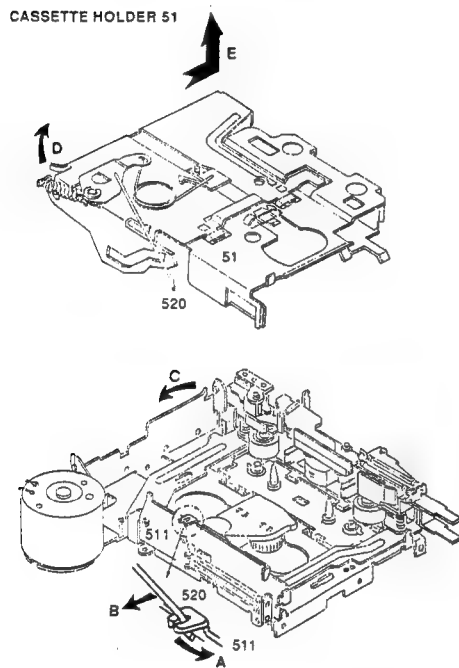


Fig. 2

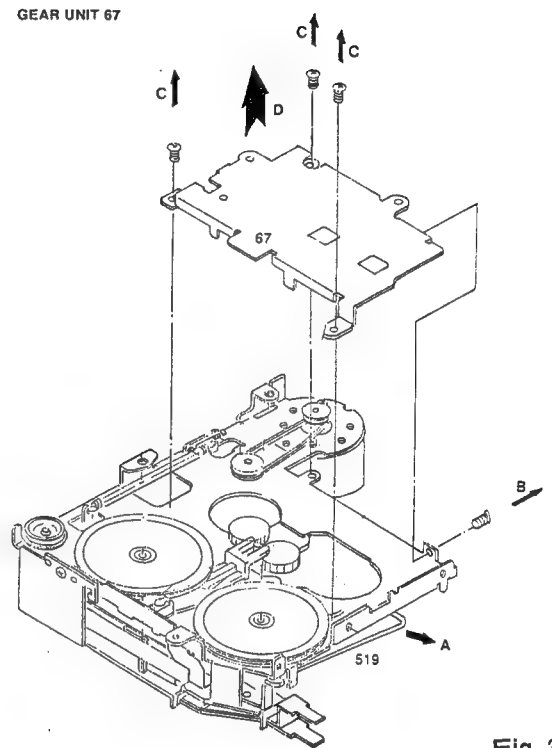


Fig. 3

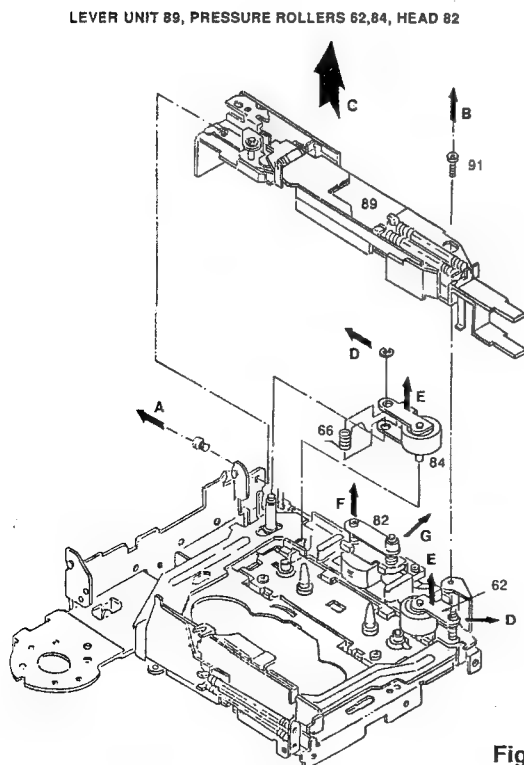


Fig. 4

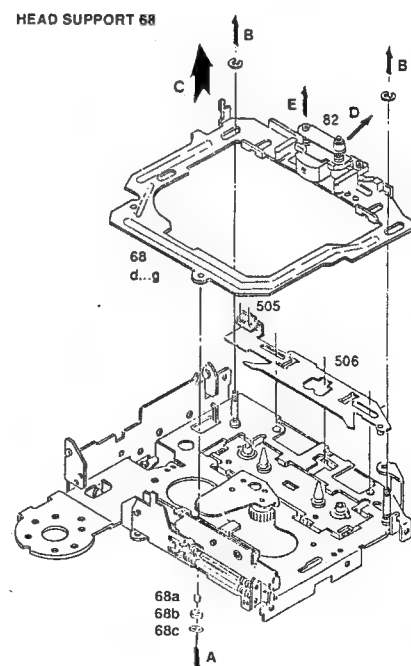


Fig. 5

**NOTES - NOTITIES - NOTES - NOTIZEN - ANNOTAZIONI:**

Last minute change: lubrication instructions will be given in a Service Information.

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## Car cassette deck TN-301NX

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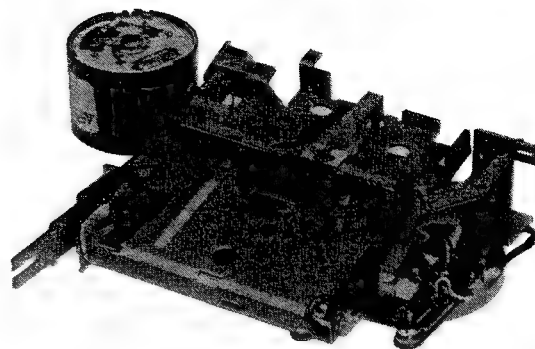
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**KiVi Service GmbH**

Windmühlenstr. 41 · 31178 Giesen/Emmerke  
Tel.: 0 51 21 / 600 20 · Fax 0 51 21 / 60 02 54



33770A22

-227  
-234  
-239

# Service Manual

12 V

**(GB)**

## TECHNICAL DATA

Tape speed	: 4,76 cm/sec. +3% -2%
Wow & flutter	: < 0,35% (JIS)
Operating voltage	: 10 V ~ 16 V
Fast winding time	: < 180 secs (C-60)

**(NL)**

## TECHNISCHE GEGEVENS

Bandsnelheid	: 4,76 cm/sec. +3% -2%
Wow & flutter	: < 0,35% (JIS)
Werkingspanning	: 10 V ~ 16 V
Tijd snel opspoelen	: < 180 sec (C-60)

**(F)**

## CARACTERISTIQUES TECHNIQUES

Vitesse de défilement	: 4,76 cm/sec. +3% -2%
Pleurage et scintillement	: < 0,35%
Tension de fonctionnement	: 10 V ~ 16 V
Durée de bobinage rapide	: < 180 sec (C-60)

**(D)**

## TECHNISCHE DATEN

Bandgeschwindigkeit	: 4,76 cm/sec. +3% -2%
Gleichlaufschwankungen	: < 0,35%
Betriebsspannung	: 10 V ~ 16 V
SVL-Dauer	: < 180 s (C-60)

**(I)**

## DATI TECNICI

Velocità di trascinamento	: 4,76 cm/sec. +3% -2%
Wow e flutter	: < 0,35%
Tensione di lavoro	: 10 V ~ 16 V
Tempo di avvolgimento	: < 180 s (C-60)

## **(GB) MAINTENANCE**

The cassette mechanism requires periodic cleaning, as well as periodic lubrication of the principal points.

### **1. Cleaning with alcohol or spirit**

Head, capstan, pressure roller, belt, pulleys.

To clean head, pressure roller and capstan it is also possible to use a drop-in cassette (SBC114-4822 389 20035).

### **2. Lubrication instructions**

Refer to exploded view.

## **(NL) ONDERHOUD**

Het cassette mechanisme dient periodiek schoongemaakt en op de belangrijkste punten gesmeerd te worden.

### **1. Schoonmaken met alcohol of spiritus**

Kop, toonas, drukrol, snaar, poelies.

Voor het reinigen van kop, drukrol en toonas kan ook de "drop-in" cassette (SBC114-4822 389 20035) worden gebruikt.

### **2. Smeervoorschrift**

Zie "exploded view" tekening.

## **(F) MAINTENANCE**

Le mécanisme de cassette doit être nettoyé régulièrement et graissé à ses points cardinaux.

### **1. Nettoyage à l'alcool ou à l'alcool éthylique**

Tête, cabestan, galet presseur, courroie, poulies.

Pour ce qui est du nettoyage de la tête, du galet presseur et du cabestan on pourra également utiliser la cassette "drop in" (SBC114-4822 389 20035).

### **2. Lubrification**

Voir le dessin de l'éclaté mécanique.

## **(D) WARTUNG**

Der Cassettenteil soll regelmässig gereinigt und an den wichtigsten Stellen geschmiert werden.

### **1. Reinigen mit Alkohol oder Spiritus**

Kopf, Tonwelle, Andruckrolle, Pese, Seilrollen.

Zum Reinigen von Kopf, Andruckrolle und Tonwelle kann auch die "drop-in" Cassette (SBC114-4822 389 20035) benutzt werden.

### **2. Schmiervorschrift**

Siehe Explosionszeichnung.

## **(I) MANUTENZIONE**

La meccanica del registratore richiede pulizie periodiche, come pure periodiche lubrificazioni dei punti principali.

### **1. Pulizia con alcool o spirito**

Testina, capstan, rullo pressore, cinghia, puleggie.

Per la pulizia della testina, del rullo pressore e del capstan si può usare la cassette (SBC114-4822 389 20035).

### **2. Istruzioni per la lubrificazione**

Fare riferimento all'esplosio.

## **(GB) ADJUSTMENT**

Equipment required:

- spring scale 50-500 g	4822 395 80028
- friction test cassette	4822 395 30054
- universal test cassette SBC420	4822 397 30071
- wow & flutter meter	

### **Azimuth**

Azimuth alignment should be carried out on a complete car radio; proceed as follows:

- connect the millivoltmeter to the loudspeaker outputs.
- insert test cassette SBC420 and play back the 10 kHz signal.
- Turn the azimuth adjust screw (M2X10) for equal and maximum output voltage reading for both the LH and RH channel.
- lockpaint the azimuth adjust screw.

### **CHECKS**

#### **1. Pressure roller pressure**

The pressure exerted by the pressure roller on the capstan should be in the 250 - 350 g range (refer to Fig. 1).

This pressure is measured as follows:

- select Play mode.
- push the pressure roller back at the given point by means of the spring scale.
- at the point where pressure roller and capstan just disengage the spring scale should be read.

If the pressure is not correct, replace spring 67.

#### **2. Friction clutch 62**

- insert friction test cassette.
- play take-up and fast wind torque should be between 35 and 75 gcm.

If the play take-up torque deviates from the aforementioned value, friction clutch 62 should be replaced.

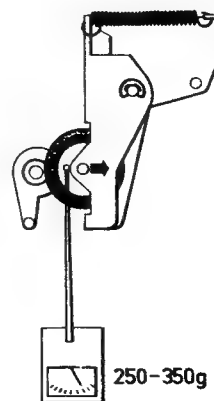
#### **3. Wow & flutter/tape speed**

This check is carried out on a complete car radio; proceed as follows:

- connect the wow & flutter meter to the loudspeaker output.
- insert test cassette SBC420 and play back the 3150Hz signal.
- the wow & flutter value should be <0,35%.
- tape speed should be 4,76 cm/sec (+3%, -2%); no speed adjustment facility has been provided.

In the event of an excessive wow and flutter value, the following parts should be checked as to correct functioning:

- motor
- pressure roller
- drive belt (in case of replacement, clean flywheel pulley)
- friction clutch
- flywheel



27 845 A12

Fig. 1

## **NL** INSTELLINGEN

Benodigde meetinstrumenten:

- |                                  |                |
|----------------------------------|----------------|
| - veerdrukmeter 50–500 g         | 4822 395 80028 |
| - frictie testcassette           | 4822 395 30054 |
| - universele testcassette SBC420 | 4822 397 30071 |
| - wow & flutter meter            |                |

### **Azimuth**

De azimuth instelling dient te geschieden met de autoradio compleet en wel als volgt:

- sluit millivoltmeter aan op de luidsprekeruitgangen
- breng de testcassette SBC420 in en geef het 10 kHz signaal weer.
- stel met behulp van de azimuthschroef (M2X10) de uitgangsspanning zo in dat deze voor zowel het linker- als het rechterkanaal gelijk en maximaal is.
- lak azimuthschroef af.

## **CONTROLES**

### **1. Drukrolkracht**

De drukrolkracht tegen de toonas moet liggen tussen 250 en 350 gram (zie fig. 1).

Deze wordt als volgt gemeten:

- breng cassettedeck in stand weergave.
- druk de drukrol met de veerdrukmeter in het aangegeven punt terug.
- op het moment dat de drukrol los komt van de toonas moet de meteraanwijzing worden afgelezen.

Indien de drukrolkracht niet juist is moet veer 67 worden vervangen.

### **2. Frictie 62**

- breng de frictie-testcassette in.
- de afspeel-/snelspoelfrictie moet 35–75 gcm zijn.

Indien de afspeelfrictie afwijkt van bovengenoemde waarde, dient frictiekoppeling 62 te worden vervangen.

### **3. Wow & flutter/bandsnelheid**

De controle dient te geschieden met de autoradio compleet en wel als volgt:

- sluit wow & flutter meter aan op de luidsprekeruitgang.
- breng de testcassette SBC420 in en geef het 3150 Hz signaal weer.
- de jengelwaarde moet <0,35% zijn.
- de bandsnelheid moet zijn 4,76 cm/sec +3%, -2%, de snelheid kan niet worden ingesteld.

Bij een buitensporige jengelwaarde dienen de volgende onderdelen op hun juiste werking te worden gecontroleerd:

- motor
- drukrol
- snaar (bij vervanging de vliegwielpoelie schoonmaken)
- frictiekoppeling
- vliegwiel

## **F** REGLAGES

Instruments de mesure requis:

- |   |                |
|---|----------------|
| - dynamomètre 50–500 g                    | 4822 395 80028 |
| - cassette d'essai de la friction         | 4822 395 30054 |
| - cassette d'essai universelle SBC420     | 4822 397 30071 |
| - instrument du pleurage et scintillement |                |

### **L'azimuth**

Le réglage de l'azimuth doit se faire lorsque l'auto-radio est au complet; on procédera alors comme suit:

- brancher le millivoltmètre sur les sorties de haut-parleur.
- insérer la cassette d'essai SBC420 et reproduire le signal de 10 kHz.
- à l'aide de la vis réglant l'azimuth (M2X10) régler la tension de sortie de façon qu'elle soit égale et au maximum pour le canal de gauche tout comme celui de droite.
- fixer la vis de l'azimuth à la laque.

## **CONTROLES**

### **1. Force du galet presseur**

La force du galet presseur contre le cabestan doit se situer entre les 250 et 350 g. (voir fig. 1).

Mesurer comme suit.:

- positionner la mécanique sur reproduction.
- retirer le galet presseur à l'aide du dynamomètre sur le point indiqué.
- au moment où le galet presser se détache du cabestan on lira l'affichage sur l'instrument.

Si la force de pression n'est pas exacte, remplacer le ressort.

### **2. Friction 62**

- introduire la cassette d'essai de friction.
- la friction au défilement et au bobinage rapide doit se situer entre 35 et 75 gcm.

Si la friction d'enroulement s'écarte de la valeur donnée ci-dessus, on procédera au remplacement du couple de friction 62.

### **3. Pleurage et scintillement/vitesse de défilement**

Le contrôle doit se faire lorsque l'auto-radio est au complet, on y alors procédera de la manière suivante:

- brancher l'instrument du pleurage sur la sortie de haut-parleur.
- introduire la cassette d'essai SBC420 et reproduire le signal de 3150 Hz.
- la valeur de pleurage doit être <0,35%.
- la vitesse de défilement doit être 4,76 sec, +3%, -2%, la vitesse n'est pas réglable.

Si le taux de pleurage s'écarte de la valeur type, il faudra vérifier le fonctionnement des composants suivants:

- moteur
- galet presseur
- courroie d'entraînement (en cas de remplacement, nettoyer le poulie du volant)
- couple de friction
- volant

## D EINSTELLUNGEN

Benötigte Messgeräte:

- Federwaage 50–500 g 4822 395 80028
- Friktionstestcassette 4822 395 30054
- Universal-Testcassette SBC420 4822 397 30071
- Gerät zum Messen der Tonhöhenschwankungen ("wow & flutter")

### Azimuth

Die Azimutheinstellung soll mit dem kompletten Autoradio stattfinden, und zwar wie folgt:

- Millivoltmeter an die Lautsprecheranschlüsse anschließen.
- Testcassette SBC420 einlegen und das 10-kHz-Signal wiedergeben.
- Mit der Azimuth-Einstellschraube (M2X10) die Ausgangsspannung so einstellen, dass sie für sowohl den linken als auch den rechten Kanal gleich ist und den Höchstwert aufweist.
- Azimuth-Einstellschraube lacksichern.

## KONTROLLEN

### 1. Andruckrollendruck

Der Andruckrollendruck an der Tonwelle soll zwischen 250 und 350 g liegen (siehe Bild 1).

Er wird wie folgt gemessen:

- Kassettendeck in Wiedergabestellung bringen.
- Die Andruckrolle mit der Federwaage an der gekennzeichneten Stelle zurückdrücken.
- Im Augenblick als sich die Andruckrolle von der Tonwelle löst, soll die Anzeige an der Federwaage abgelesen werden.

Falls der Andruckrollendruck nicht richtig ist, muss Feder 67 ausgewechselt werden.

### 2. Reibkupplung 62

- Friktionstestcassette einlegen.
- Die VL-/SVL-Friktion soll 35–75 gcm betragen.

Wenn die VL-Friktion vom vorgenannten Wert abweicht, muss Friktionskupplung 62 ausgewechselt werden.

### 3. Tonhöhenschwankungen/Bandgeschwindigkeit

Die Kontrolle soll mit komplettem Autoradio wie folgt vorgenommen werden.:

- Gerät zum Messen der Tonhöhenschwankungen an den Lautsprecheranschluss anschließen.
- Testcassette SBC420 einlegen und das 3150 Hz-Signal wiedergeben.
- Der Jaulwert soll  $< 0,35\%$  sein.
- Die Bandgeschwindigkeit soll  $4,76 \text{ s}$  ( $+3\%$ ,  $-2\%$ ) sein; die Geschwindigkeit lässt sich nicht einstellen.

Bei einem übermäßigen Jaulwert sollen folgende Bauteile auf ihr richtiges Funktionieren geprüft werden.:

- Motor
- Andruckrolle
- Antriebsseil (beim Auswechseln die Schwungradseilrolle reinigen)
- Reibkupplung
- Schwungrad

## I REGOLAZIONI

Strumenti richiesti:

- Dinamometro 50–500 g 4822 395 80028
- Cassette campione per la frizione 4822 395 30054
- Cassette campione universale 4822 397 30071
- SBC420
- Strumento wow e flutter

### Azimuth

La regolazione dell'azimuth deve essere effettuata sul riproduttore collegato all'autoradio procedendo nel seguente modo:

- Collegare un millimetro all'uscita per altoparlante.
- Inserire una cassette campione SBC420 e riprodurre il segnale a 10 kHz.
- Ruotare la vite per la regolazione dell'azimuth (M2X10) finché la tensione letta per entrambi i canali sia la più elevata.
- Fissare con lacca la vite di regolazione per l'azimuth.

## CONTROLLI

### 1. Pressione del rullo preminastro

La pressione esercitata dal rullo pressore sul capstan deve essere compresa tra 250–350 gr (vedere fig. 1).

Questa pressione deve essere misurata nel seguente modo:

- Mettere l'apparecchio in Play
- Spingere il rullo pressore indietro al punto dato per mezzo del dinamometro.
- Nel punto dove il rullo pressore e il capstan sono liberi la scala del dinamometro darà una certa indicazione.

Se la pressione del rullo preminastro non è corretta sostituire la molla.

### 2. Forza della frizione 62

- Inserire la cassette per il controllo della frizione.
- Riprodurre e leggere l'indicazione sul piattello di trascinamento; deve essere compresa tra 35 e 75 gcm.

Se in posizione play l'indicazione del piattello di trascinamento non è compresa nei valori sopra riportati deve essere sostituita la frizione 62.

### 3. Wow e flutter/velocità del nastro

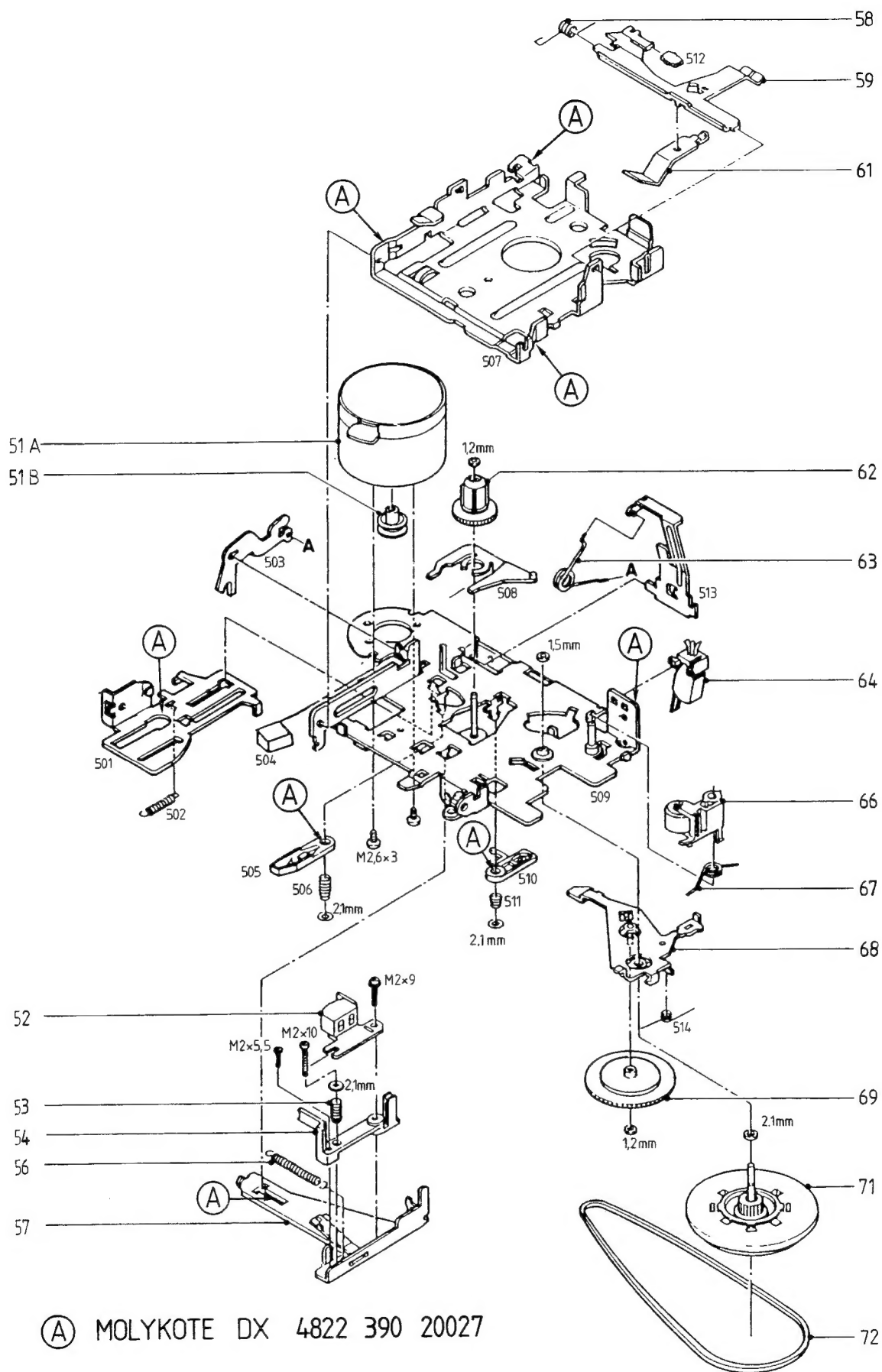
Questo controllo deve essere effettuato sul riproduttore collegato all'autoradio procedendo nel seguente modo:

- Collegare un misuratore di Wow e flutter all'uscita per altoparlante.
- Inserire la cassette campione SBC420 e riprodurre il segnale a 3150 Hz.
- Il valore di Wow e flutter deve essere  $< 0,35\%$ .
- La velocità deve essere  $4,76 \text{ cm/sec}$  ( $+3\%$ ,  $-2\%$ ); non è prevista una regolazione semplice.

Nel caso ci sia un valore eccessivo di Wow e flutter, bisogna controllare le seguenti parti se funzionano in modo corretto:

- Motore
- Rullo pressore
- Cinghia di trascinamento (nel caso di sostituzione, pulire la puleggia del volano)
- Frizione
- Volano





51	4822 361 30404	57	4822 466 82939	61	4822 492 71142	67	4822 492 42623	
52	4822 249 30188	58	4822 492 33345	62	4822 466 70743	68	4822 522 10458	
53	4822 492 52328	58	4822 492 33354	-234	63	4822 492 42624	69	4822 522 20452
54	4822 404 21247	59	4822 466 82941		64	4822 271 30778	71	4822 528 60396
56	4822 492 33344	59	4822 466 82943	-234	66	4822 403 20242	72	4822 358 31196

NOTES - NOTITIES - NOTES - NOTIZEN - ANNOTAZIONI:

Lined area for notes, consisting of multiple horizontal lines.

4269

# Car cassette deck TN-301NX

-265

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# Service Manual

12 V

For this type, please refer to Service Manual TN-301NX-227  
(from week 405) with following exceptions:

Some brackets and a connecting cable have been added.

These deviations have been incorporated in the exploded view  
and in the complete list of parts.

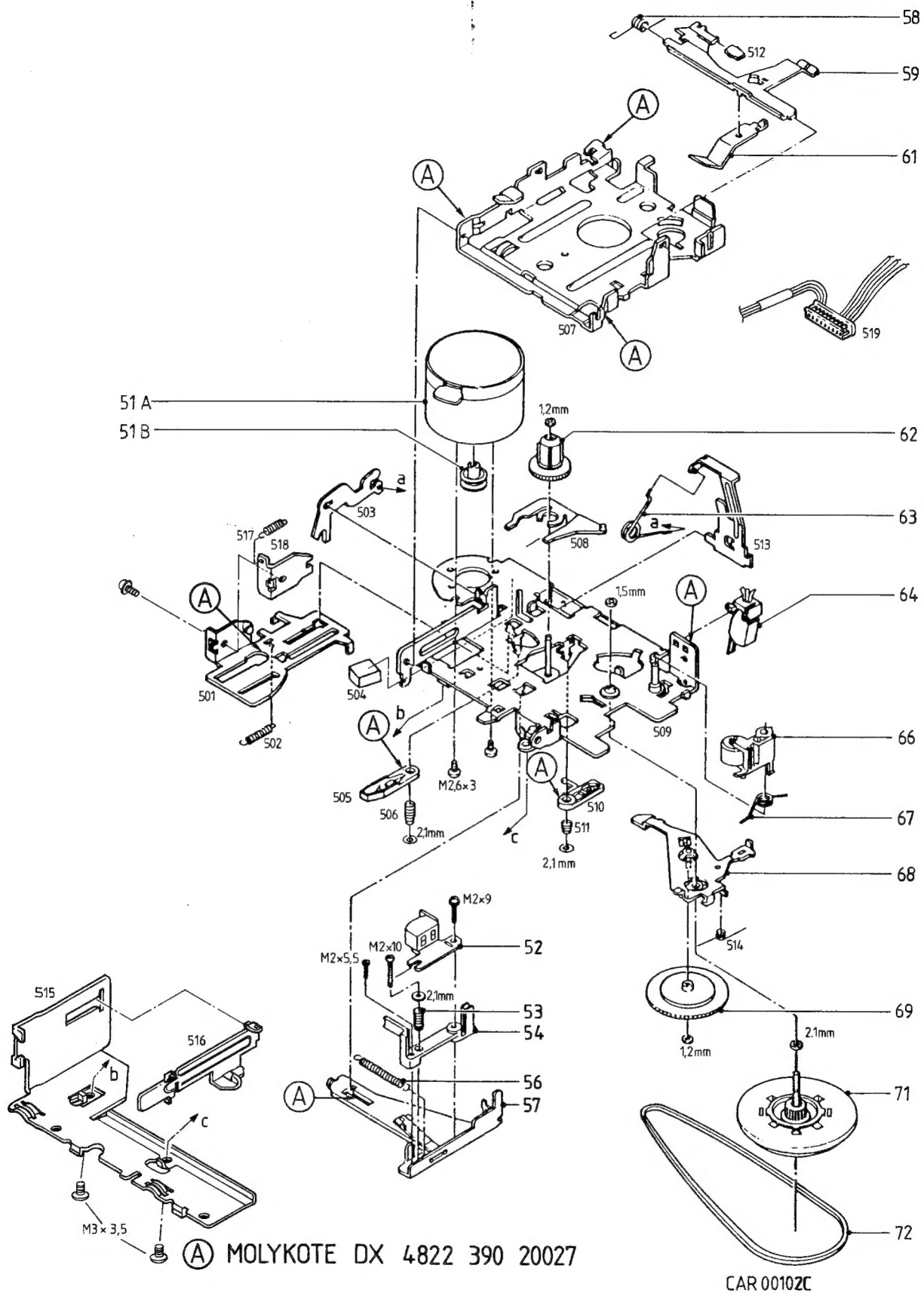
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# PHILIPS

4269



51	4822 361 30404	57	4822 466 82939	63	4822 492 42624	69	4822 522 20452
52	4822 249 30188	58	4822 492 33345	64	4822 271 30778	71	4822 528 60369
53	4822 492 52328	59	4822 466 82941	66	4822 403 20242	72	4822 358 31196
54	4822 404 21247	61	4822 492 71142	67	4822 492 42623		
56	4822 492 33344	62	4822 466 70743	68	4822 522 10458		